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**United States Patent** [19]

Guetz et al.

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[54] **CONTINUOUSLY ADAPTIVE DIGITAL VIDEO COMPRESSION SYSTEM AND METHOD FOR A WEB STREAMER**

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[73] Assignee: **Cubic Video Technologies, Inc.**, San Diego, Calif.

[21] Appl. No.: **09/084,820**

[22] Filed: **May 26, 1998**

**Related U.S. Application Data**

[63] Continuation-in-part of application No. 08/976,127, Sep. 18, 1997.

[51] **Int. Cl.**<sup>7</sup> ..... **H04B 1/66; H04N 7/12**

[52] **U.S. Cl.** ..... **375/240; 348/384; 348/398; 348/413; 382/242**

[58] **Field of Search** ..... 348/384, 385, 348/415, 413, 402, 390, 10, 14, 15, 17, 12, 398, 416; 382/232, 244, 239, 246, 250, 242; 395/200.77, 672; 345/336, 337; 341/65; 370/354, 468; 375/240

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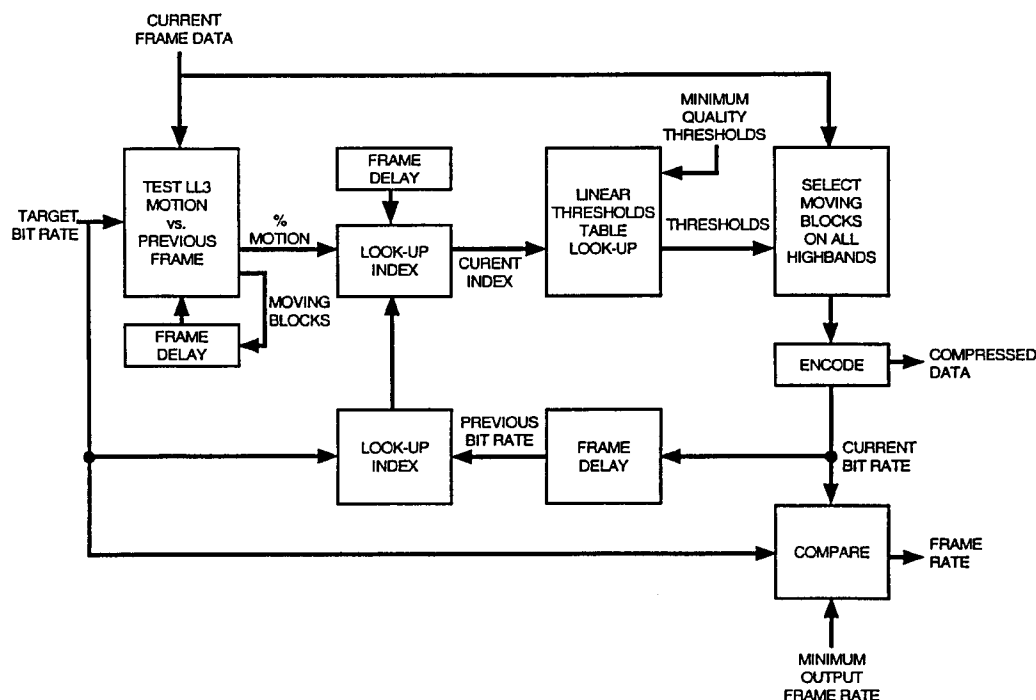
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*Assistant Examiner*—Gims Philippe  
*Attorney, Agent, or Firm*—Frank D. Gilliam

[57] **ABSTRACT**

A cost effective continuously adaptive digital video system and method for compressing color video data for moving images. The method describes capturing an analog video frame and digitizing the image into a preferred source input format for compression using a combination of unique lossy and lossless digital compression techniques including sub-band coding, wavelet transforms, motion detection, run length coding and variable length coding. The system includes encoder and decoder (CODEC) sections for compression and decompression of visual images to provide high compression with good to excellent video quality. The compressed video data provides a base video layer and additional layers of video data that are multiplexed with compressed digital audio to provide a data stream that can be packetized for distribution over inter or intranets, including wireless networks over local or wide areas. The (CODEC) system continuously adjusts the compression of the digital images frame by frame in response to comparing the available bandwidth on the data channel to the available bandwidth on the channel for the previous frame to provide an output data stream commensurate with the available bandwidth of the network transmission channel and with the receiver resource capabilities of the client users. The compression may be further adjusted by adjustment of the frame rate of the output data stream.

**34 Claims, 12 Drawing Sheets**

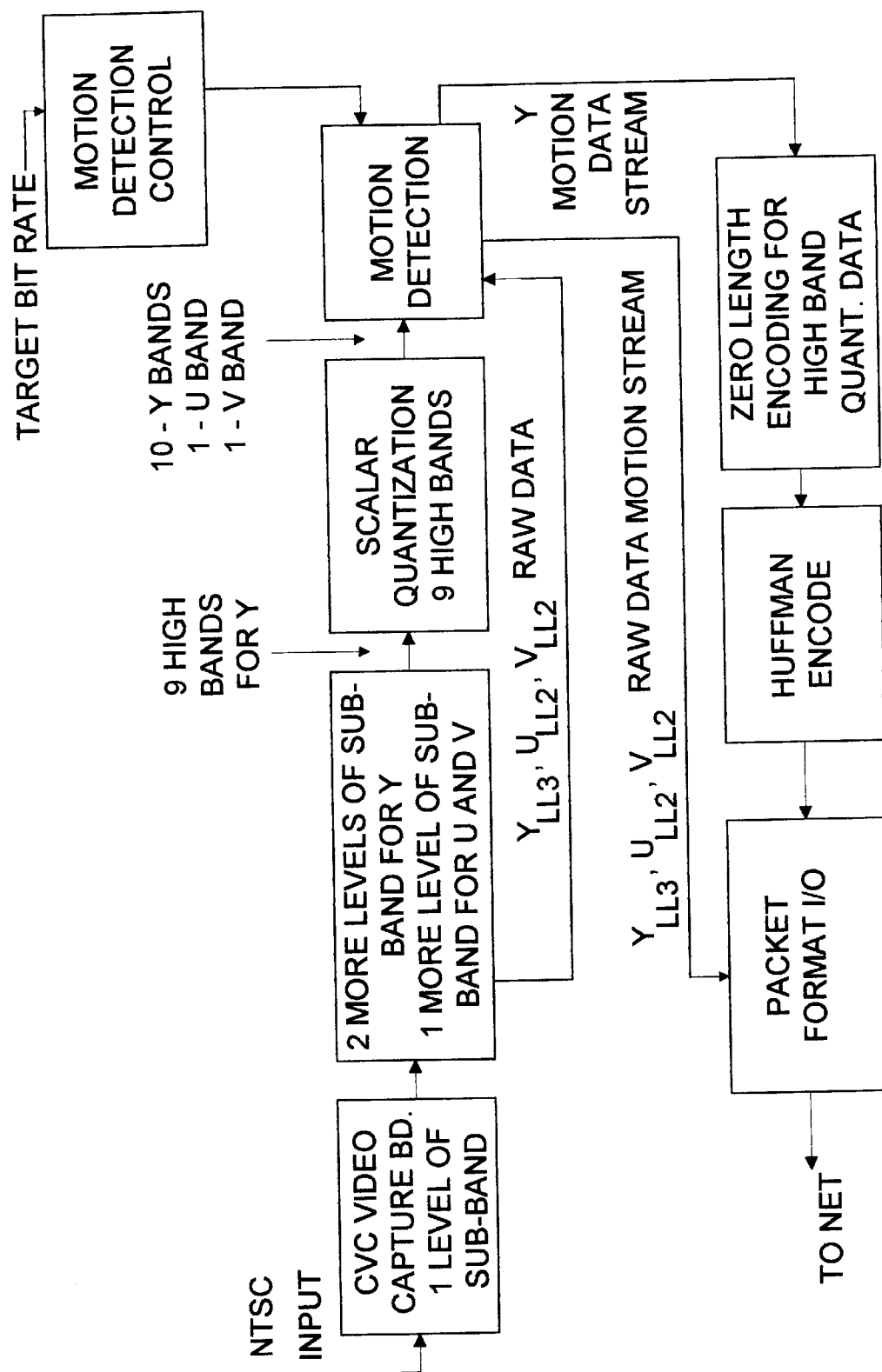
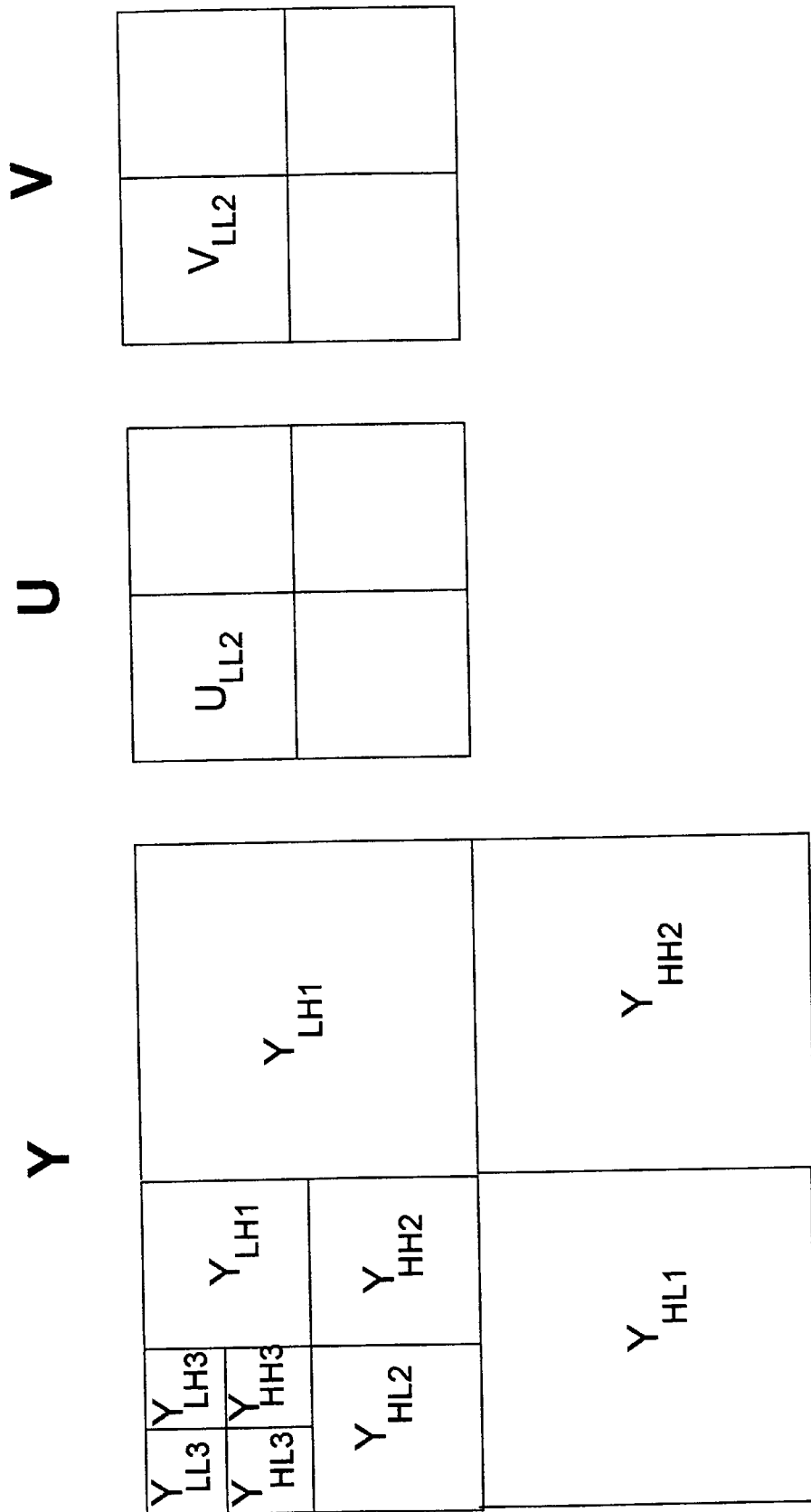


FIG. 1



**FIG. 2**

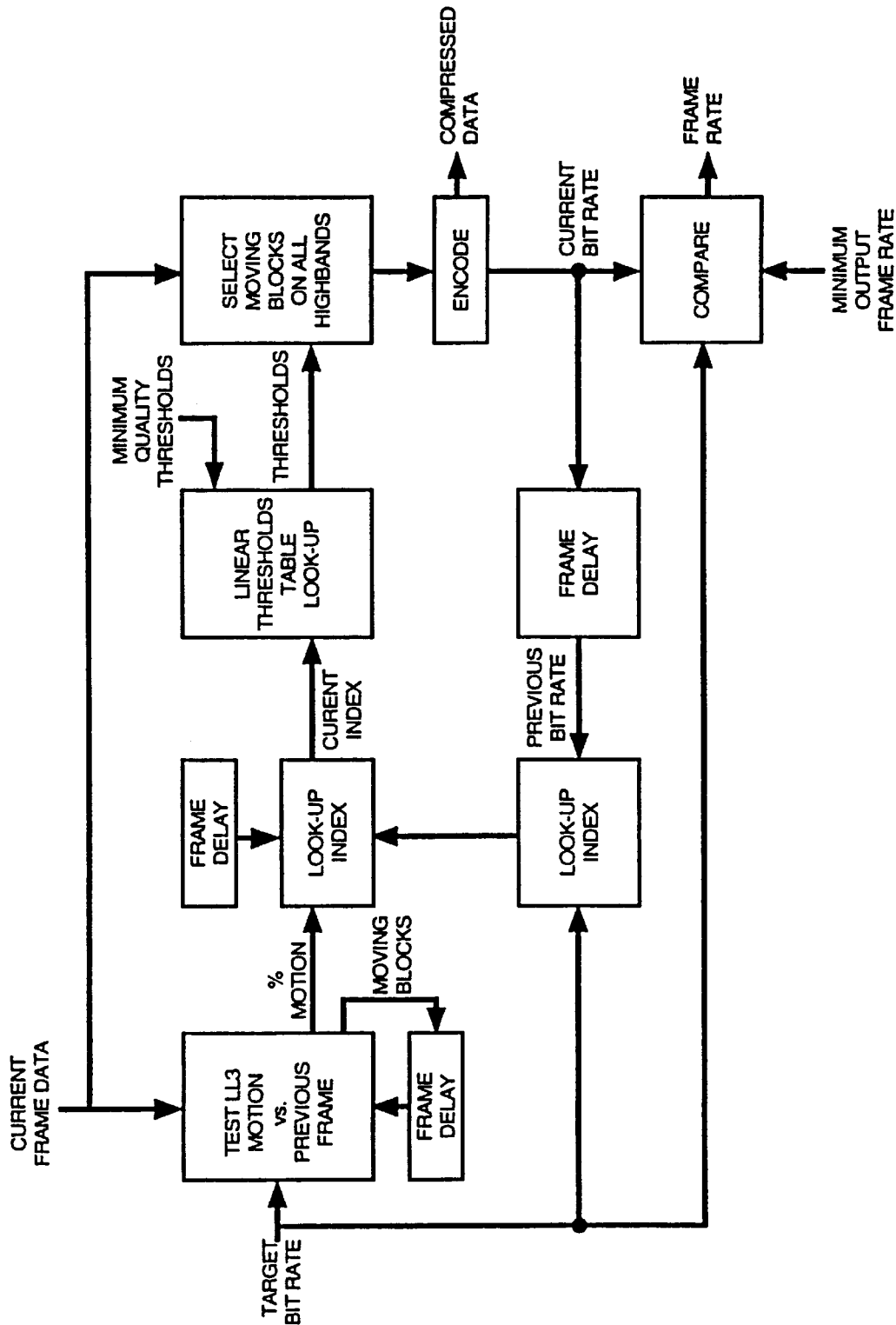


Fig. 3

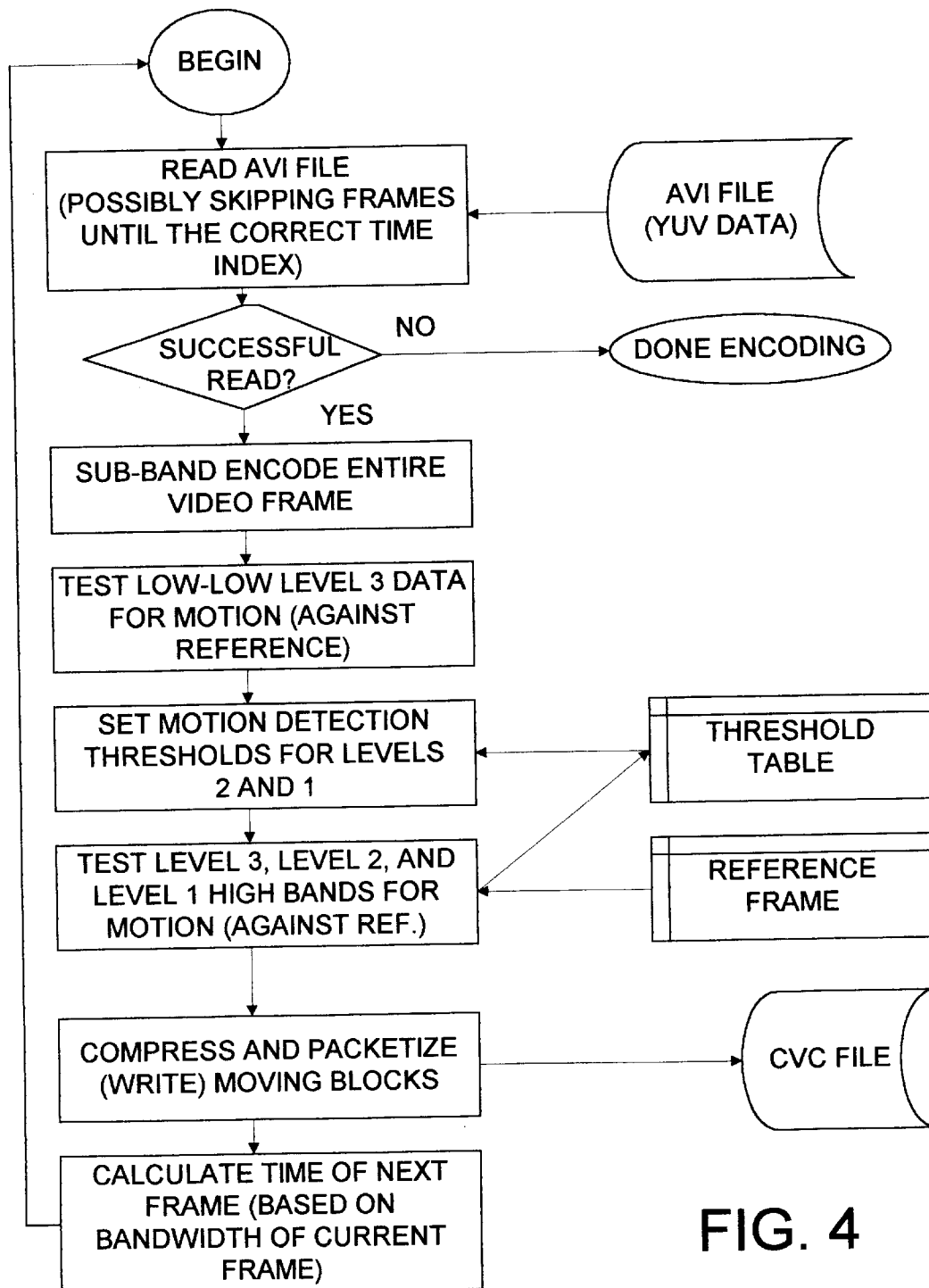


FIG. 4

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