UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE PATENT TRIAL AND APPEAL BOARD

IPR2016-00923
Patent 5,812,789

Patent Owner Parthenon Unified Memory Architecture L

Background

- Uncompressed files (e.g., video) can be very large
- Transmission and storage of uncompressed files is exper
- It is advantageous to compress files (e.g., video) for transmission and storage

The size of a digital representation of uncompressed vi images is dependent on the resolution and color depth of image. A movie composed of a sequence of such images, the audio signals that go along with them, quickly beco large enough so that, uncompressed, such a movie typica cannot fit entirely onto a conventional recording medi such as a Compact Disc (CD). It is now also typically hibitively expensive to transmit such a movie uncompress

It is therefore advantageous to compress video and au sequences before they are transmitted or stored.

Background

- An encoder compresses an uncompressed file (e.g., vide

- A decoder decompresses a compressed file (e.g., video)

> Video and/or audio compression devices (hereina "encoders") are used to encode the video and/or au sequence before it is transmitted or stored. The resul bitstream is decoded by a video and/or audio decompress device (hereinafter "decoder") before the video and/or au sequence is displayed.

[`789 Pat., 1:4

Background

If the decoder does not operate in real time the decoded movie would stop periodically between images until the decoder can get access to the memory to process the next image. The movie may stop quite often between images and wait.

To reduce the minimum required bandwidth and still operate in real time, the decoder **10** may need to drop frames. If the decoder **10** regularly does not decode every frame then it may not need to stop between images. However, this produces very poor continuity in the images. This is problematic with an image encoded to the MPEG-1 or MPEG-2 standard, or any standards that uses temporal compression. In temporal (interpicture) compression some of the images are decoded based on previous images and some based on previous and future images. Dropping an image on which the decoding of other images is based is unacceptable and will result in many poor or even completely unrecognizable images.
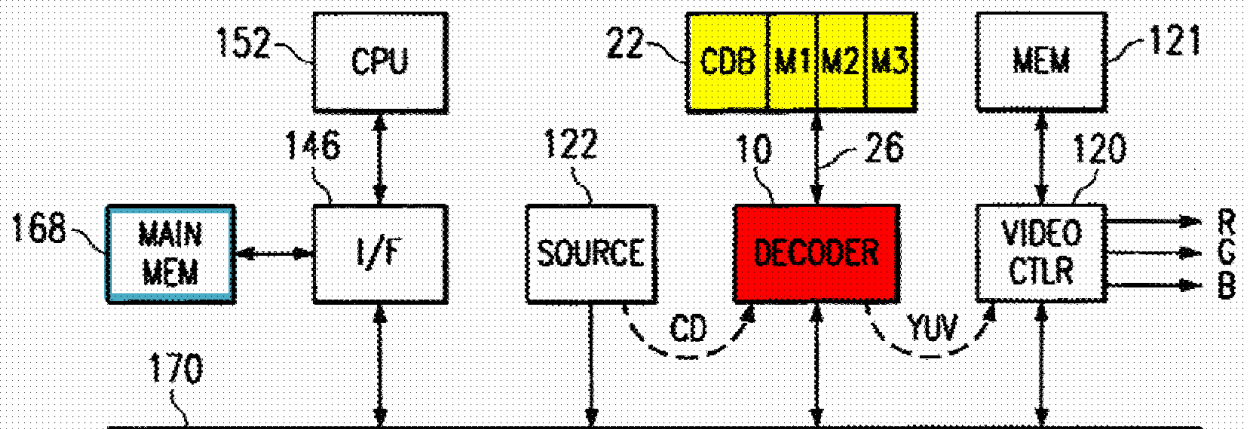
Background

Fig. 1c
(Prior Art)

One widely used solution to allow a component in a computer system to operate in real time is to give the component its own dedicated memory. Thus, as shown in FIG. 1c, the decoder 10 can be given its own dedicated memory 22, with a dedicated bus 26 to connect the decoder 10 to its memory 22. The dedicated memory 22, its controller and the pins to control this memory significantly

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