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# United States Patent [19]

Wittenstein et al.

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[54] **METHOD AND APPARATUS FOR COMPRESSION AND DECOMPRESSION OF COLOR DATA**

[75] Inventors: **Andreas Wittenstein**, Lagunitas; **Loren Carpenter**, Novado; **Leo Hourvitz**, San Francisco, all of Calif.

[73] Assignee: **Pixar**, Richmond, Calif.

[21] Appl. No.: **484,345**

[22] Filed: **Jun. 7, 1995**

[51] **Int. Cl.**[6] ..... **G06K 9/00**

[52] **U.S. Cl.** ..... **382/166**; 382/236

[58] **Field of Search** ..... 382/166, 236, 382/239; 358/539, 430; 348/416, 415, 412, 413

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*Primary Examiner*—Yon Couso

*Attorney, Agent, or Firm*—Hecker & Harriman

[57] **ABSTRACT**

The present invention is a method and apparatus for compressing and decompressing data. In particular, the present invention provides a method for compressing color video data for storage on a CD-ROM for later playback on a computer system. The present invention uses an asymmetrical compression-decompression scheme that provides color compression, temporal compression, and spatial compression. In the preferred embodiment of the invention, the color compression is accomplished in three stages. In the first stage, the colors are sampled from the source data. This generates a histogram that contains the colors of the source material. Next, these colors are quantized into the target colors. In the third step of the color compression, the actual colors on the film are mapped to the quantized colors. The temporal compression step specifies a target display rate. Only those pixels that have changed significantly from frame to frame are updated. A bit mask is generated for each frame and is used to target those pixels that will be updated for each frame. The spatial compression step is used to further reduce storage requirements by dividing data into pixel "tiles." The CD-ROM stores an index into the table so that when data is required only the index need be provided, not the tile.

**19 Claims, 14 Drawing Sheets**

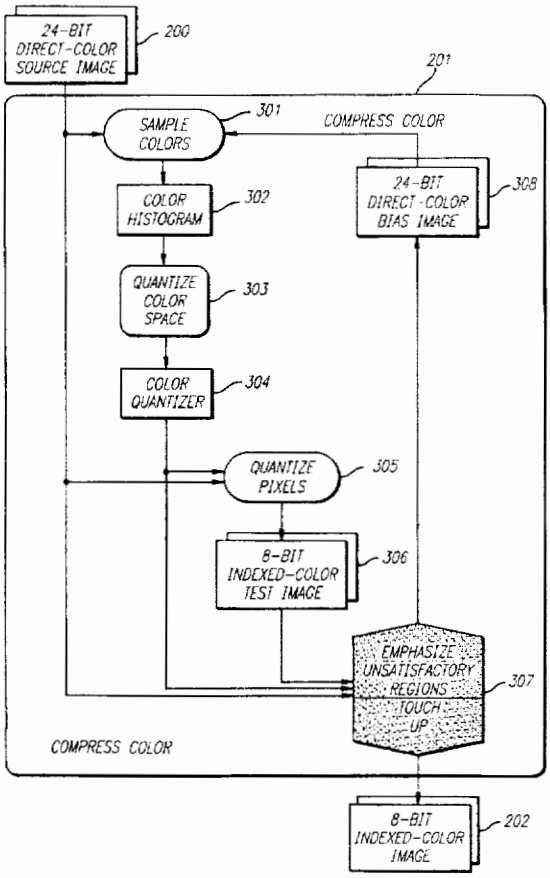
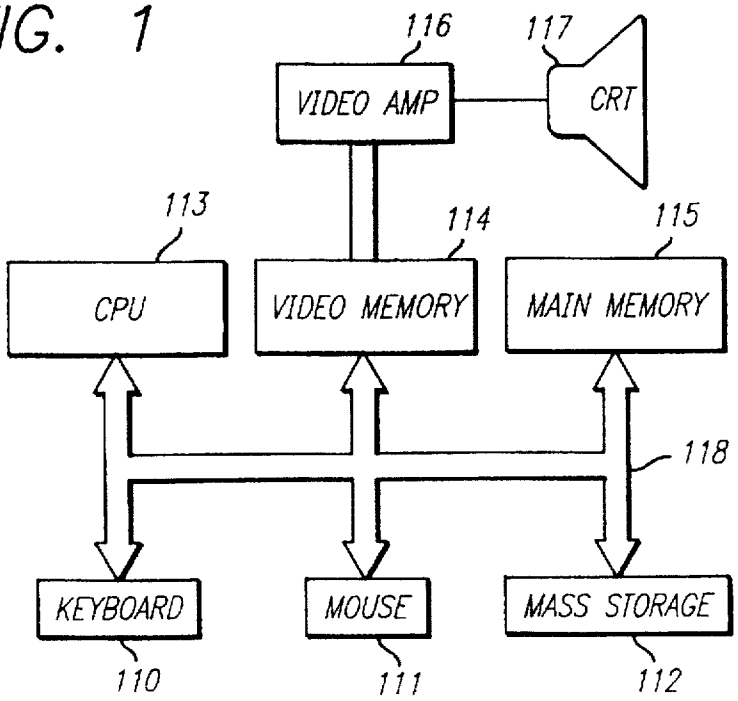


FIG. 1



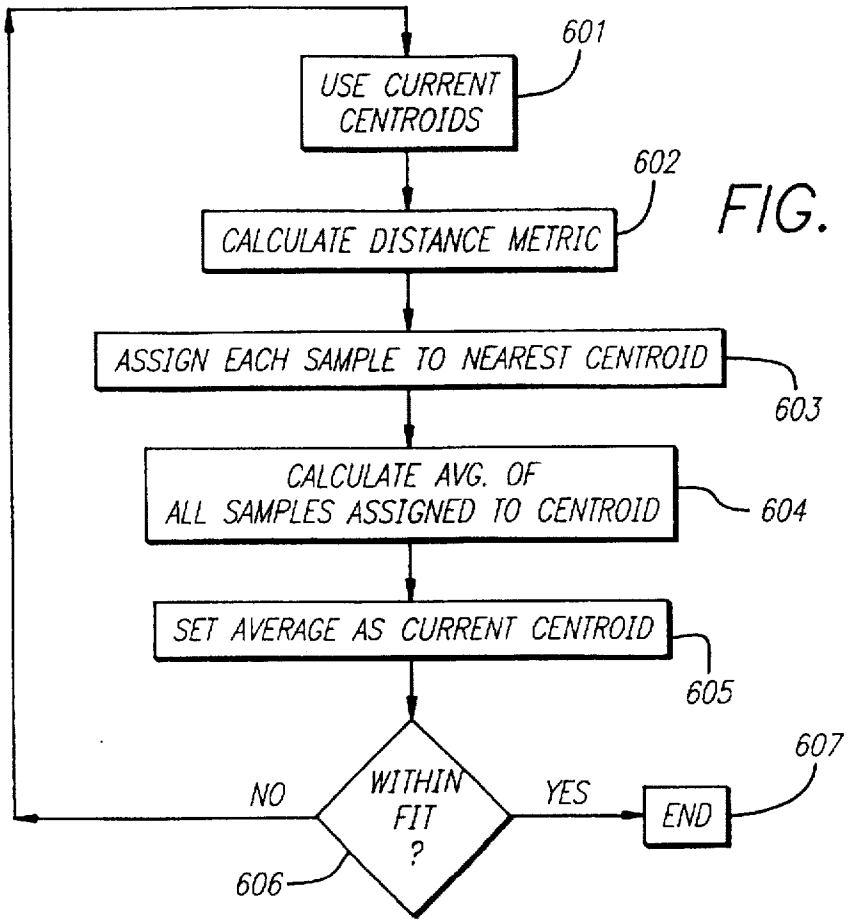




FIG. 6

FIG. 2

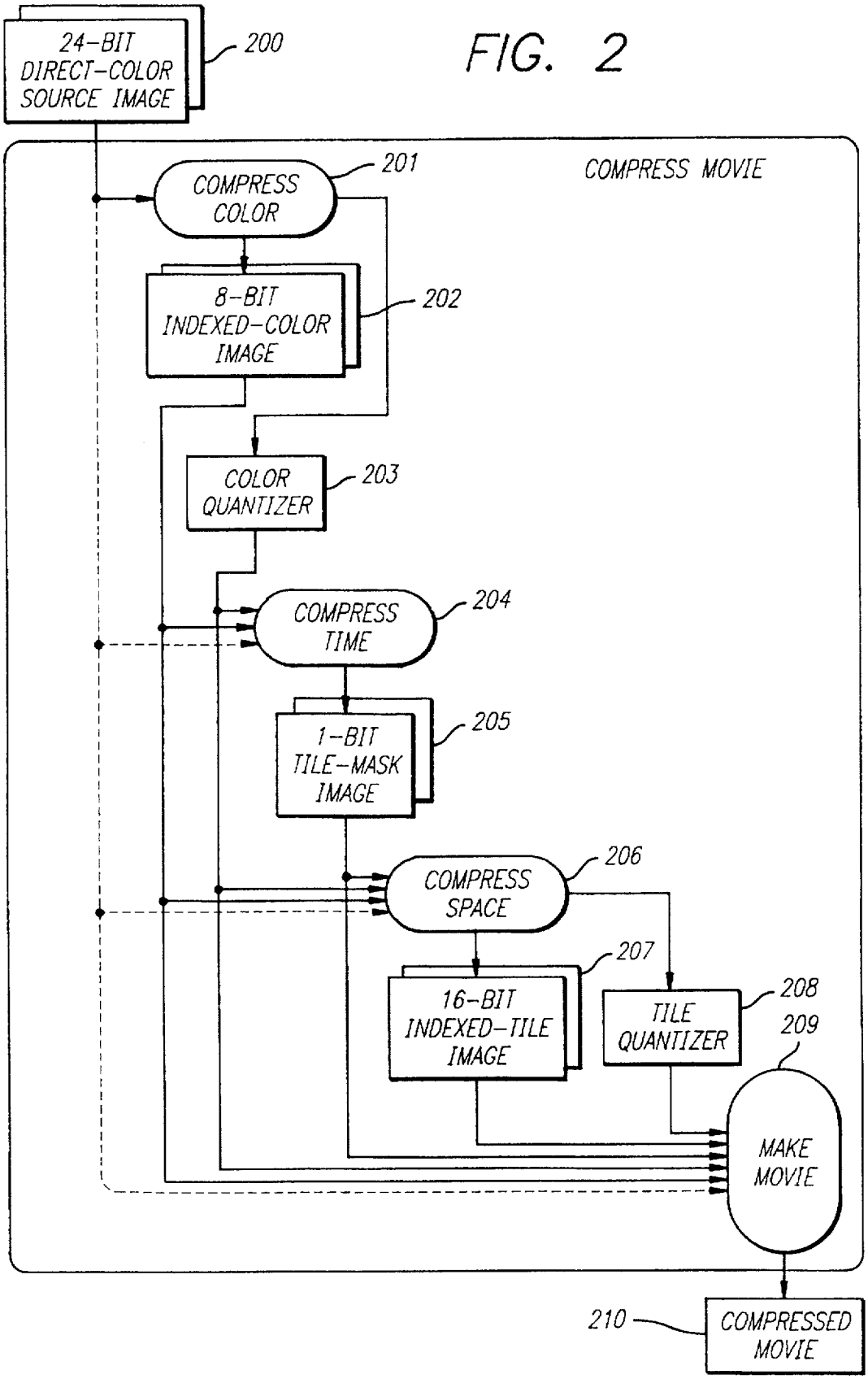
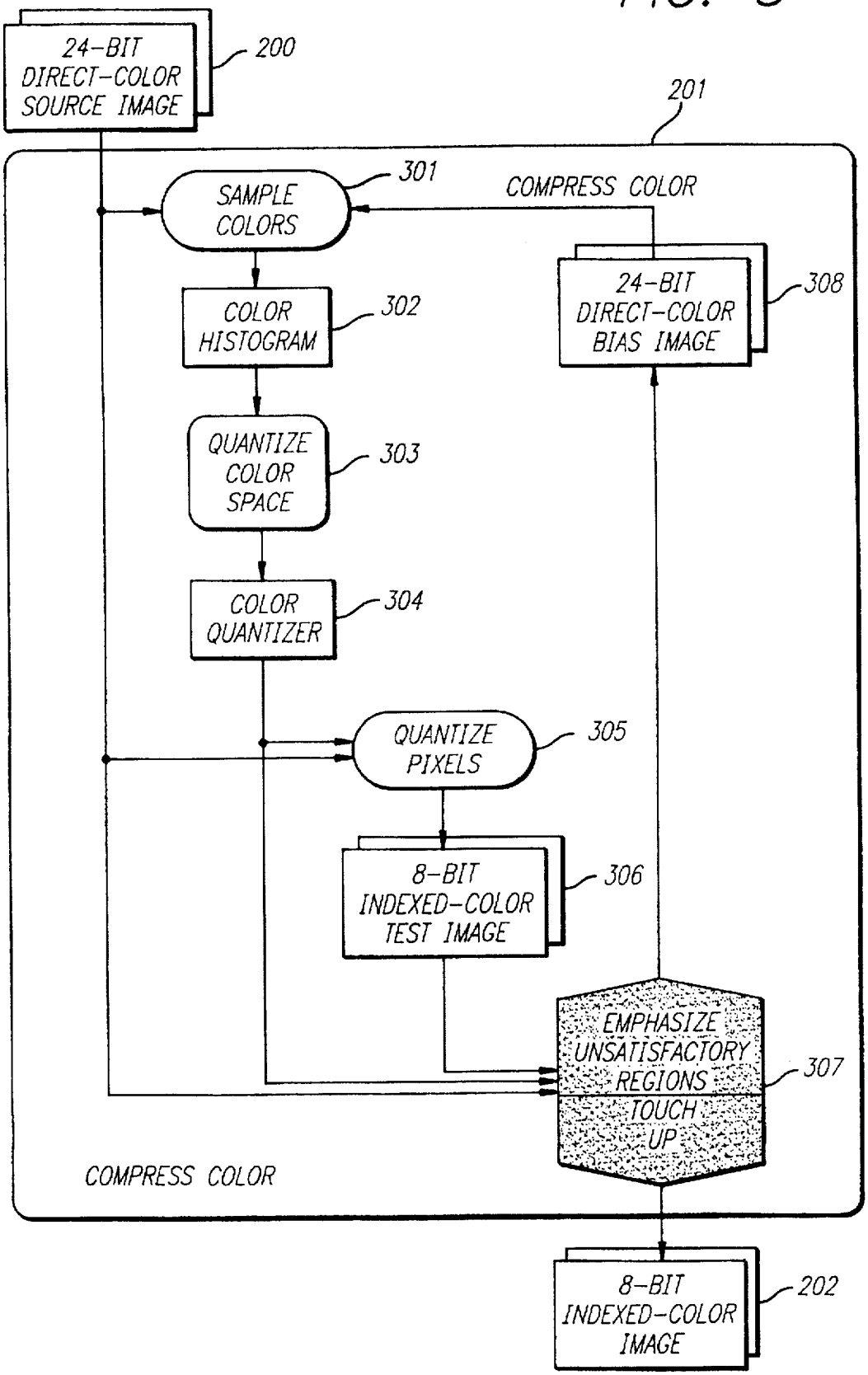


FIG. 3



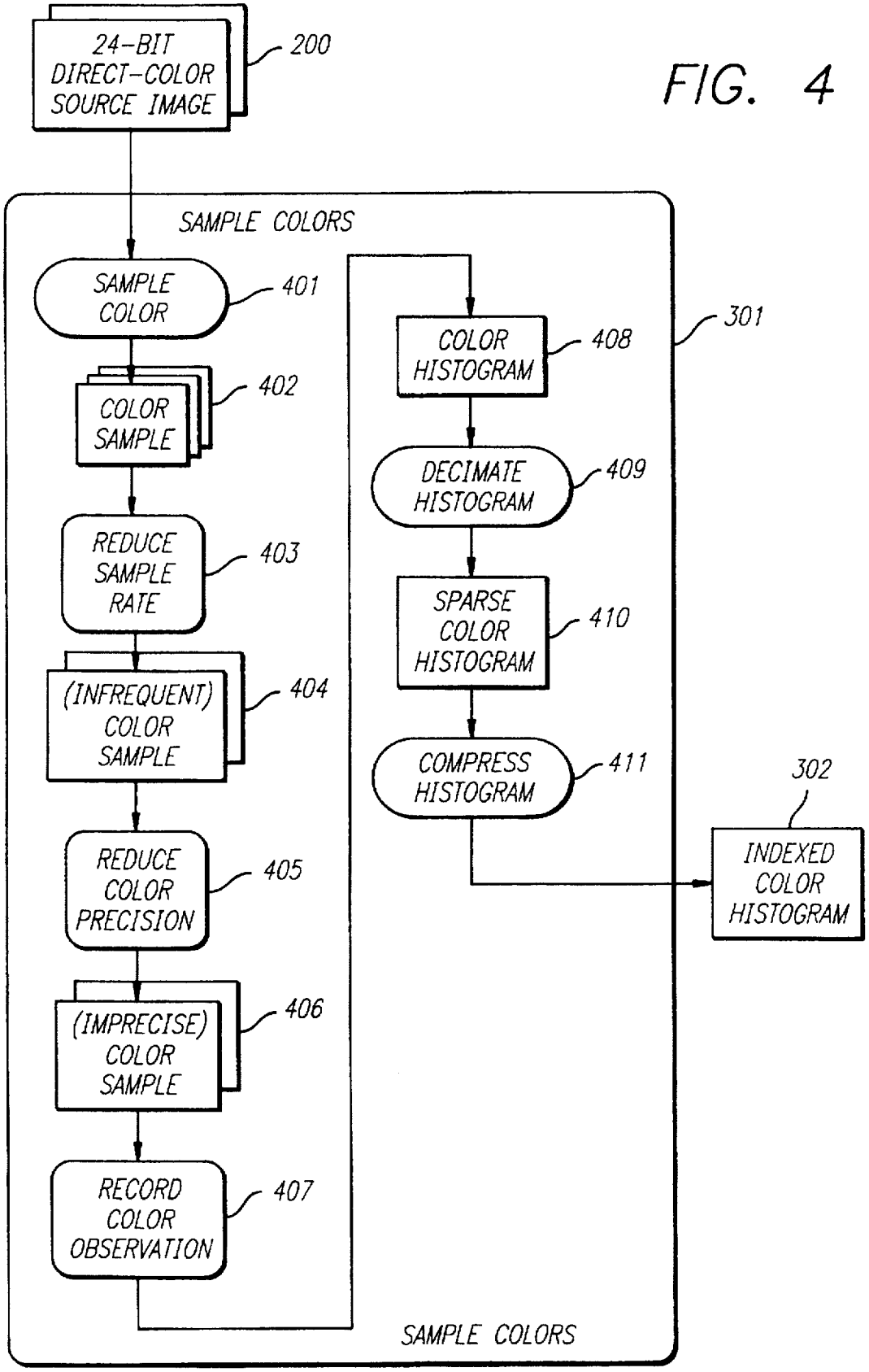



FIG. 4

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