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United States Patent [19]

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Baker

[45] Date of Patent: **Nov. 11, 1997**

[54] TELECONFERENCING IMAGING SYSTEM WITH AUTOMATIC CAMERA STEERING

4,980,761 12/1990 Natori 348/15
5,508,734 4/1996 Baker 348/36

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[57] ABSTRACT

[21] Appl. No.: **496,742**

An automatic, voice-directional video camera image steering system specifically for use for teleconferencing that electronically selects segmented images from a selected panoramic video scene typically around a conference table so that the participant in the conference currently speaking will be the selected segmented image in the proper viewing aspect ratio, eliminating the need for manual camera movement or automated mechanical camera movement. The system includes an audio detection circuit from an array of microphones that can instantaneously determine the direction of a particular speaker and provide directional signals to a video camera and lens system that provides a panoramic display that can electronically select portions of that image and, through warping techniques, remove any distortion from the most significant portions of the image which lie from the horizon up to approximately 30 degrees in a hemispheric viewing area.

[22] Filed: **Jun. 30, 1995**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 281,331, Jul. 27, 1994, Pat. No. 5,508,734.

[51] Int. Cl.⁶ **H04N 7/18**

[52] U.S. Cl. **348/36; 348/15; 348/53; 348/214; 348/580**

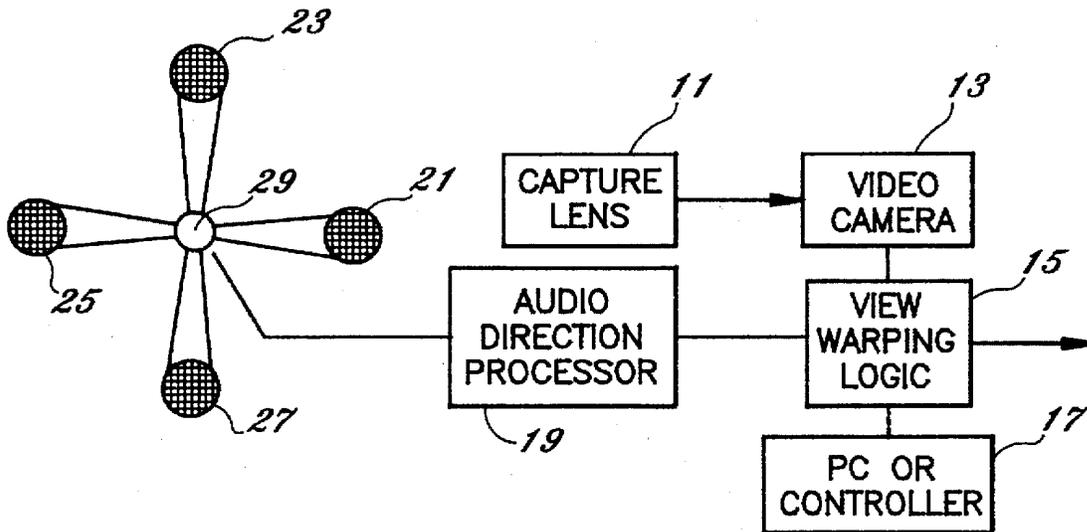
[58] Field of Search **348/15, 214, 36, 348/53, 580; H04N 7/18**

[56] References Cited

U.S. PATENT DOCUMENTS

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14 Claims, 7 Drawing Sheets



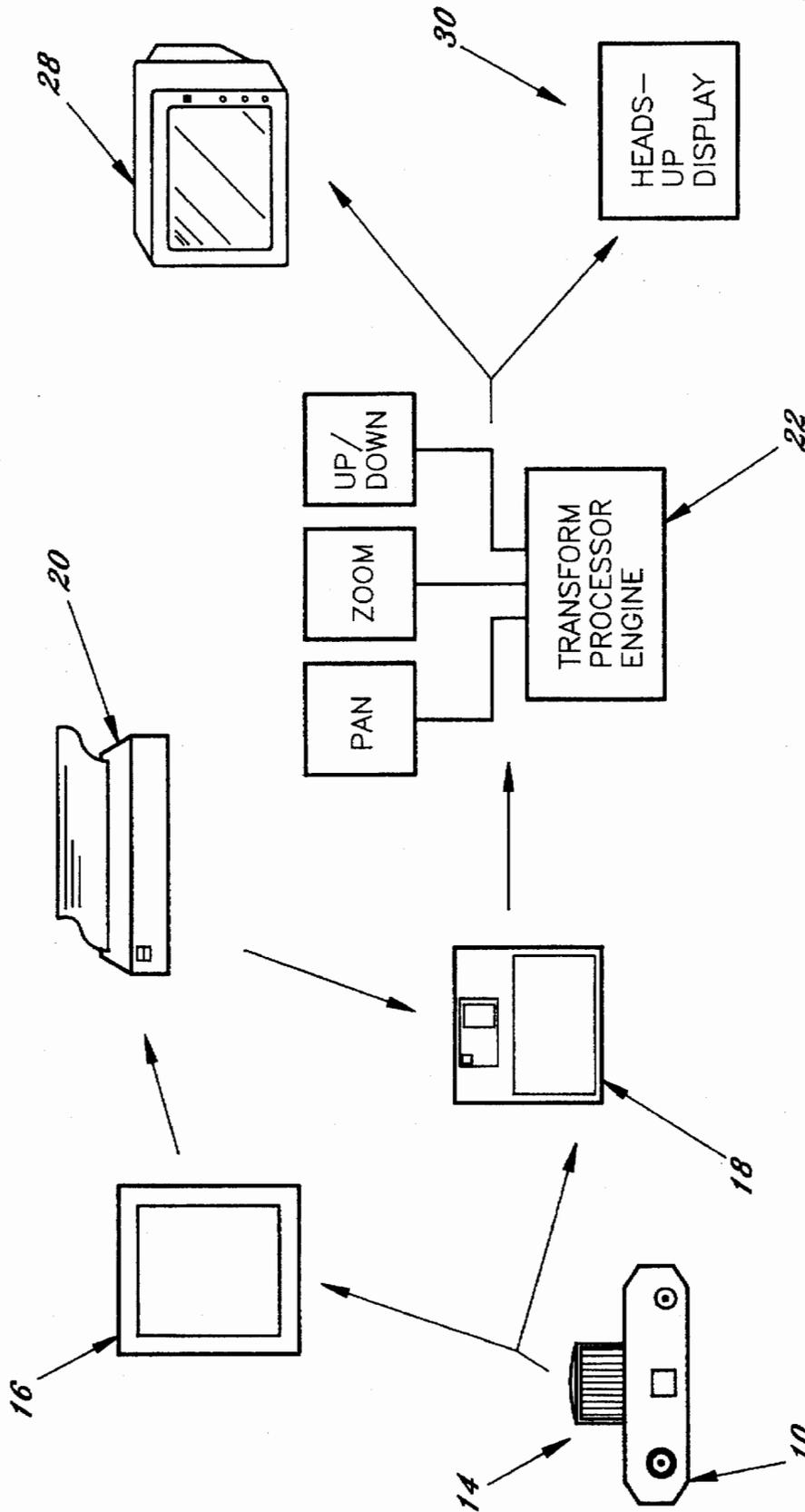


Fig. 1

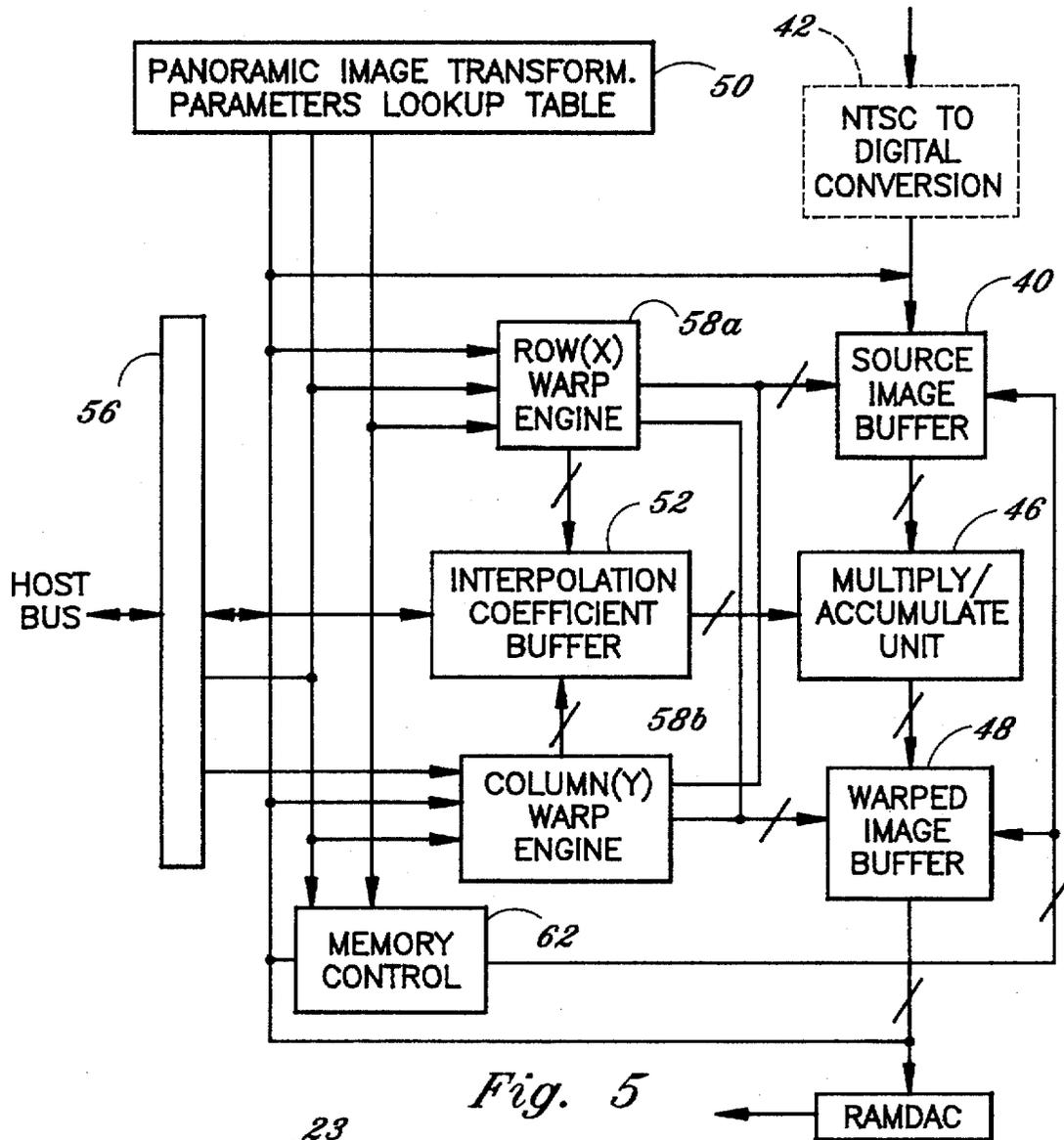


Fig. 5

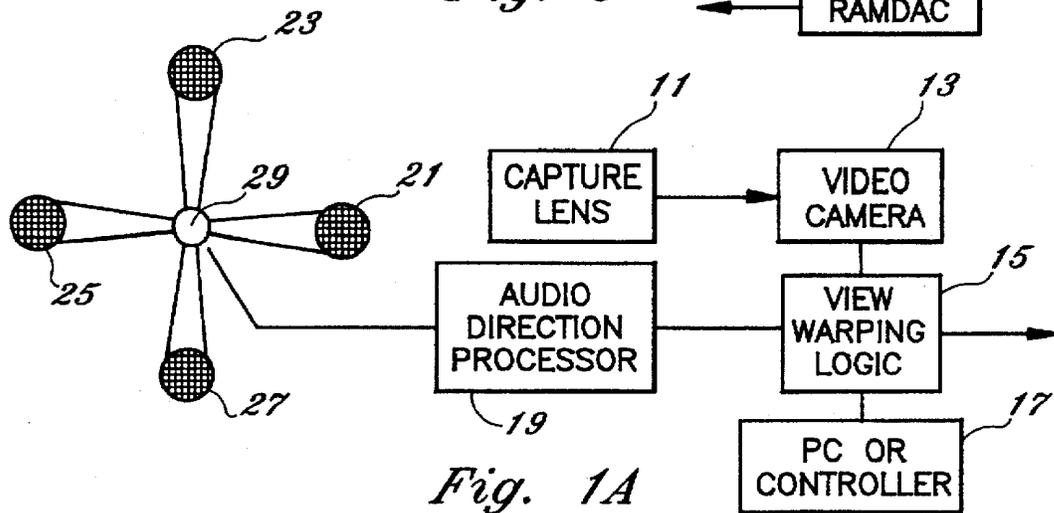


Fig. 1A

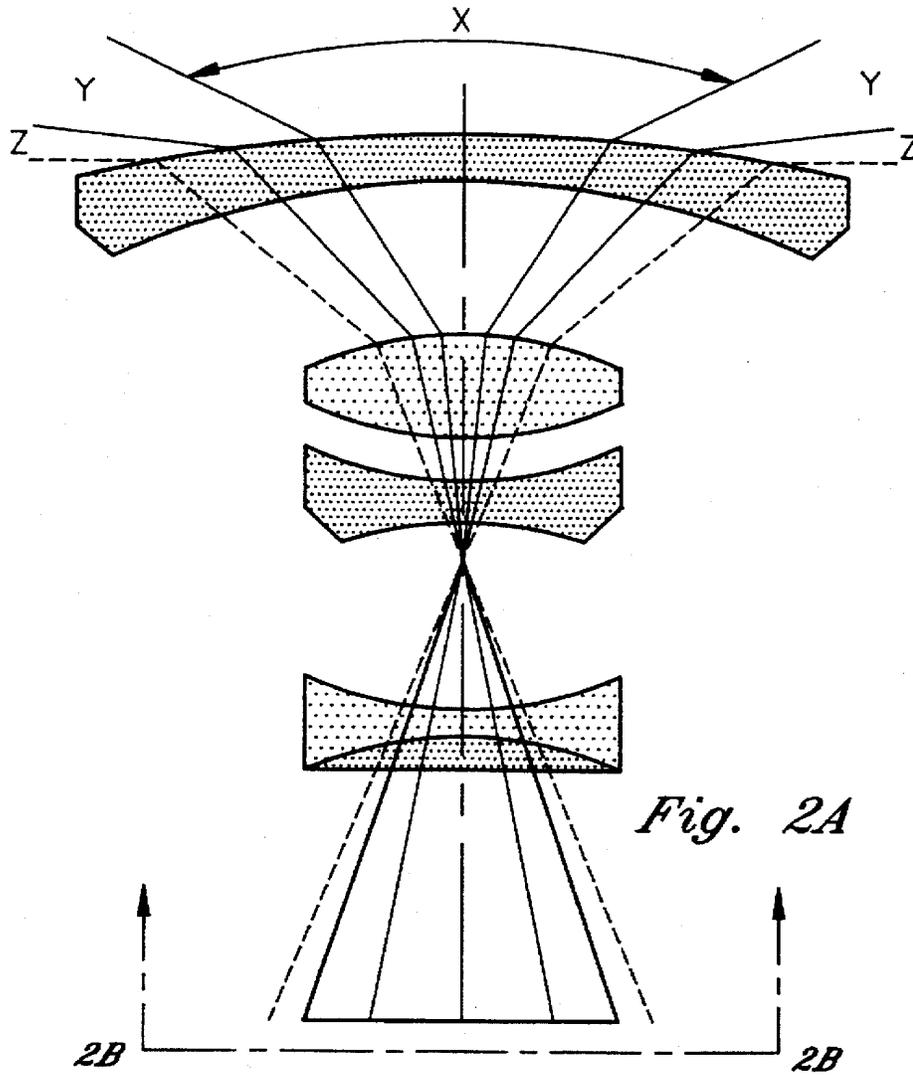


Fig. 2A

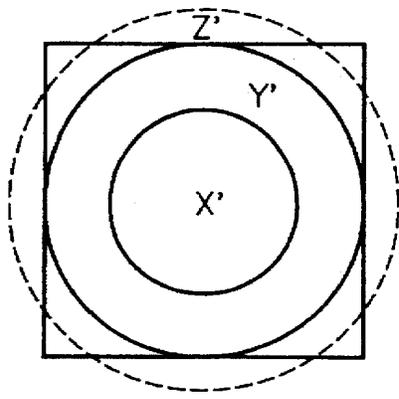


Fig. 2B

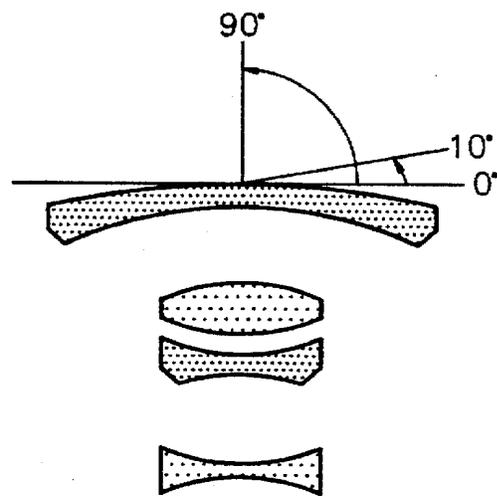
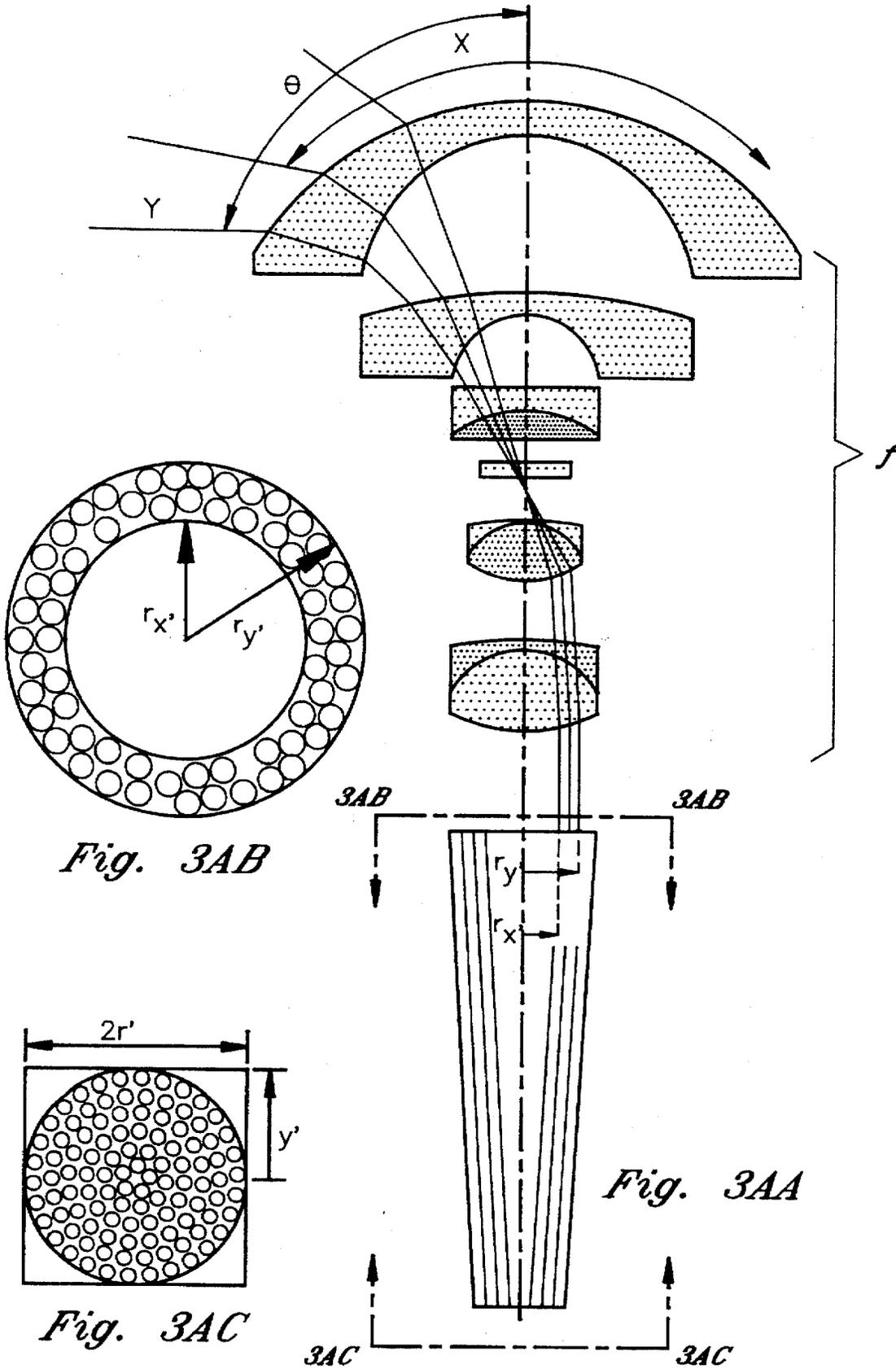


Fig. 2C



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