



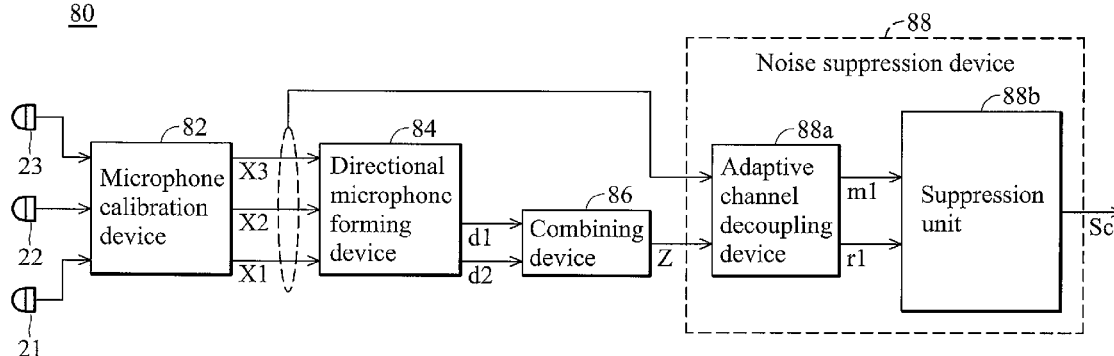
US 20080170716A1

(19) **United States**(12) **Patent Application Publication**
Zhang(10) **Pub. No.: US 2008/0170716 A1**(43) **Pub. Date: Jul. 17, 2008**(54) **SMALL ARRAY MICROPHONE APPARATUS
AND BEAM FORMING METHOD THEREOF**(75) Inventor: **Ming Zhang**, Cupertino, CA (US)

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CA (US)(21) Appl. No.: **11/622,058**(22) Filed: **Jan. 11, 2007****Publication Classification**(51) **Int. Cl.**
H04R 5/027 (2006.01)(52) **U.S. Cl.** **381/92**(57) **ABSTRACT**

The invention provides a beam forming method for a small array microphone apparatus to generate cone beam pattern by processing a combined bi-directional beam pattern of two virtual bi-directional microphones formed through at least three omni-directional microphones arranged in an L-shape. The invention also provides a small array microphone apparatus using the beam forming method according to the invention to suppress noise by processing a combined bi-directional beam pattern of two virtual bi-directional microphones formed through at least three omni-directional microphones arranged in an L-shape, thereby outputting a clear audio signal with cone beam pattern.

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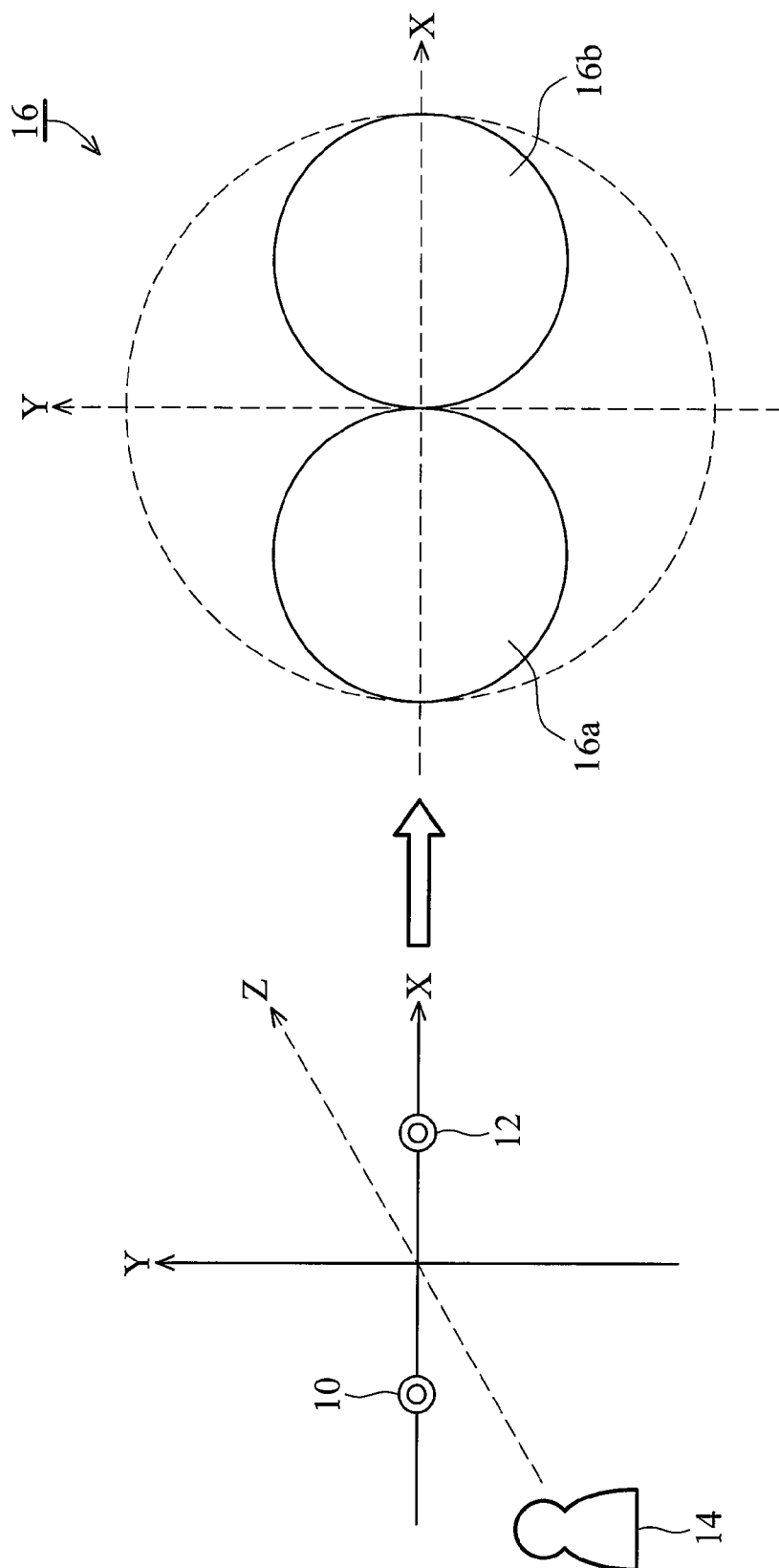


FIG. 1 (RELATED ART)

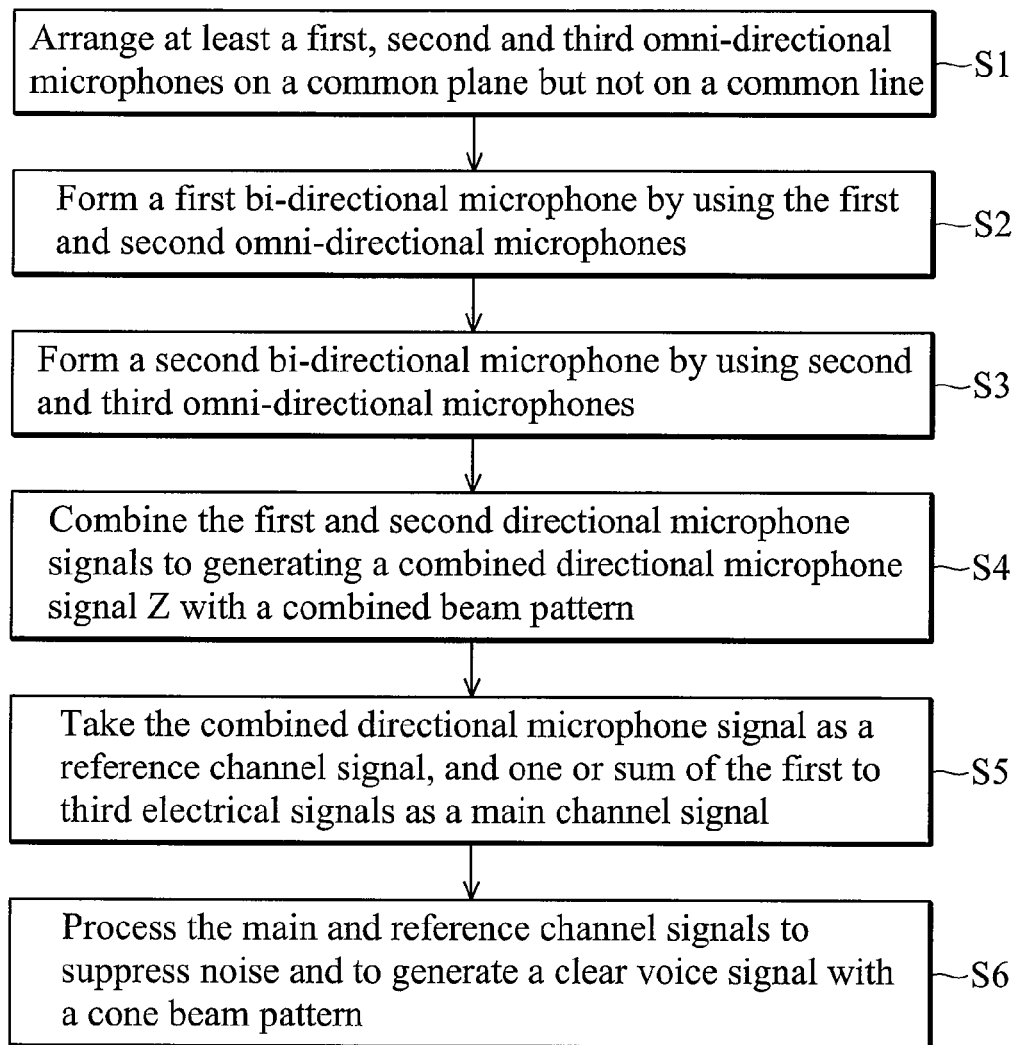


FIG. 2

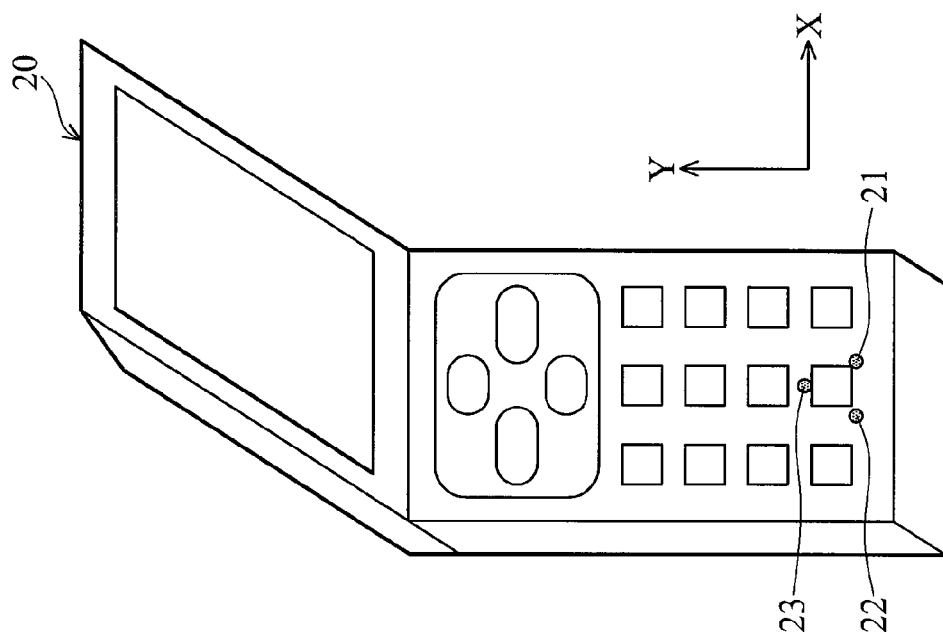


FIG. 3B

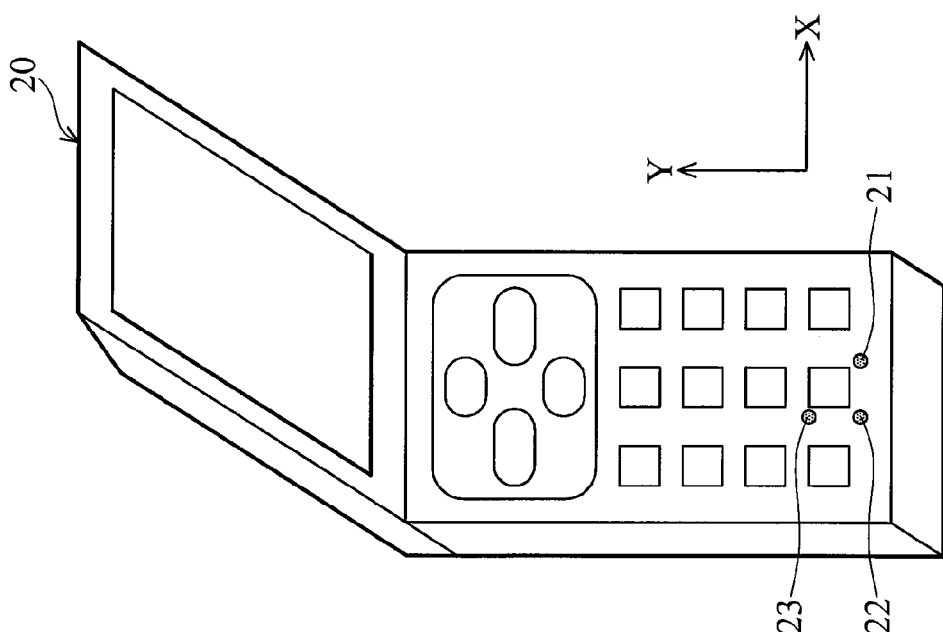


FIG. 3A

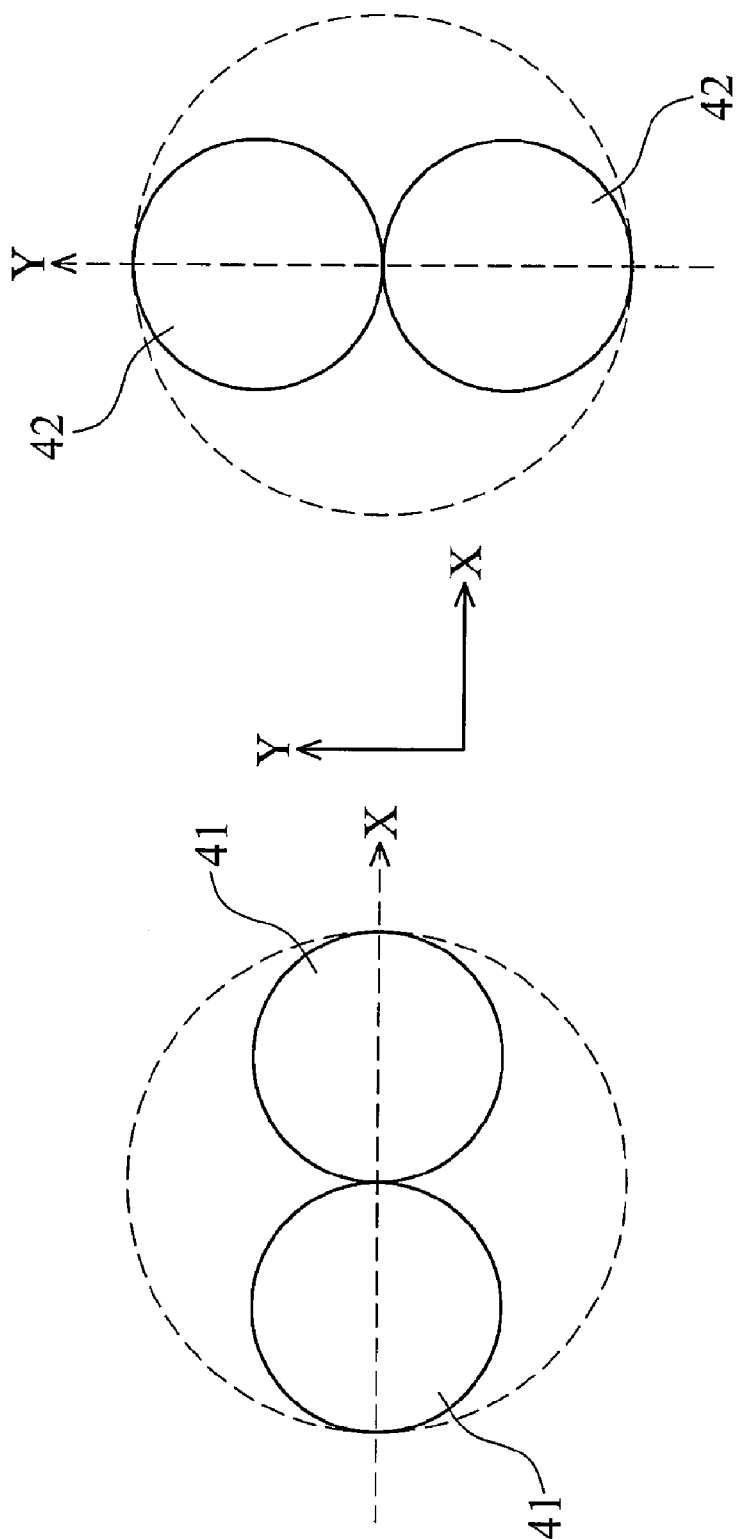


FIG. 4

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