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(19) **United States**(12) **Patent Application Publication****Chol et al.**(10) **Pub. No.: US 2004/0161121 A1**(43) **Pub. Date: Aug. 19, 2004**(54) **ADAPTIVE BEAMFORMING METHOD AND APPARATUS USING FEEDBACK STRUCTURE****Publication Classification**(51) **Int. Cl.⁷ H04R 3/00; G10L 21/02**(52) **U.S. Cl. 381/92; 704/226**(75) **Inventors: Changkyu Chol, Seoul (KR); Jaywoo Kim, Gyeonggi-do (KR); Donggeon Kong, Busan-si (KR)**

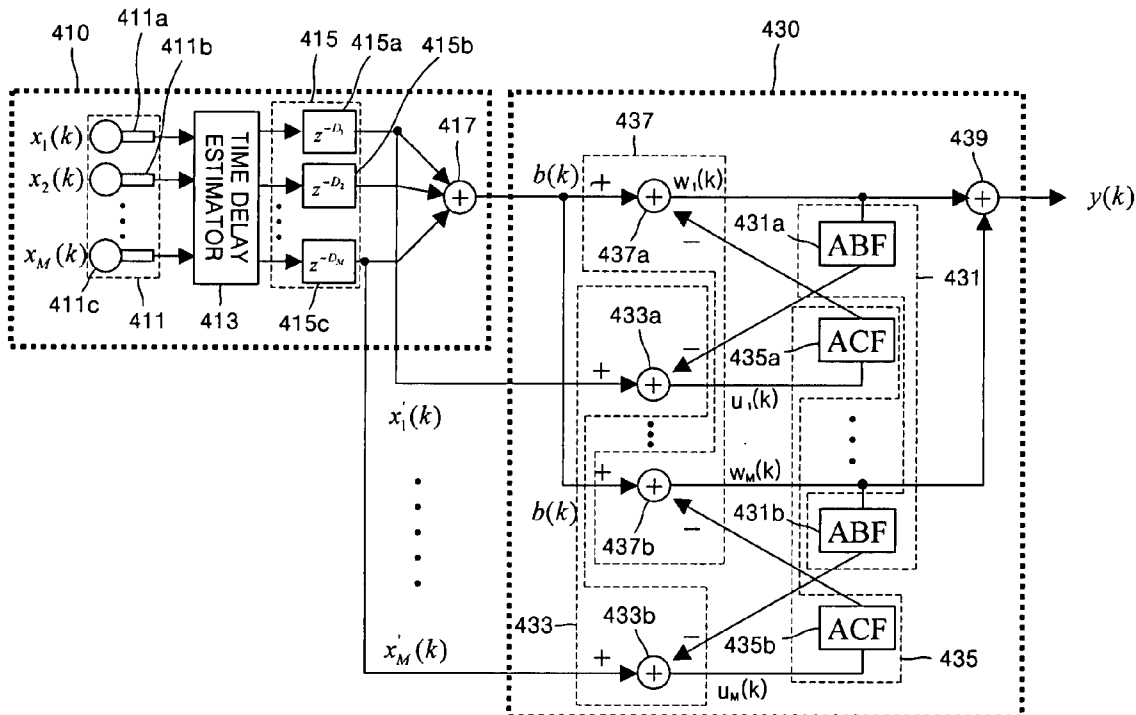
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(57) **ABSTRACT**

An adaptive beamforming apparatus and method includes a fixed beamformer that compensates for time delays of M noise-containing speech signals input via a microphone array having M microphones (M is an integer greater than or equal to 2), and generates a sum signal of the M compensated noise-containing speech signals; and a multi-channel signal separator that extracts pure noise components from the M compensated noise-containing speech signals using M adaptive blocking filters that are connected to M adaptive canceling filters in a feedback structure and extracts pure speech components from the added signal using the M adaptive canceling filters that are connected to the M adaptive blocking filters in the feedback structure.



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FIG. 1 (PRIOR ART)

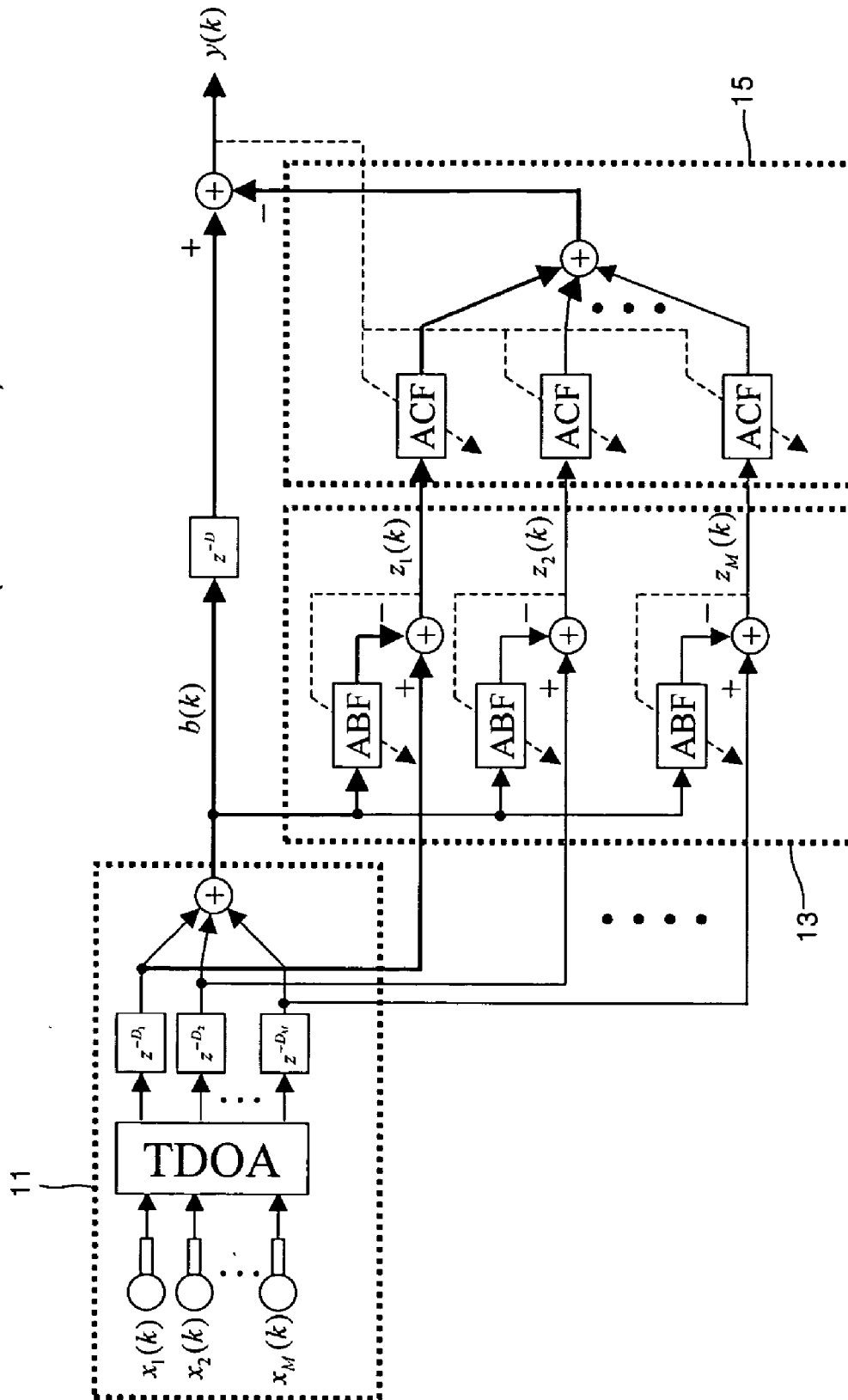


FIG. 2 (PRIOR ART)

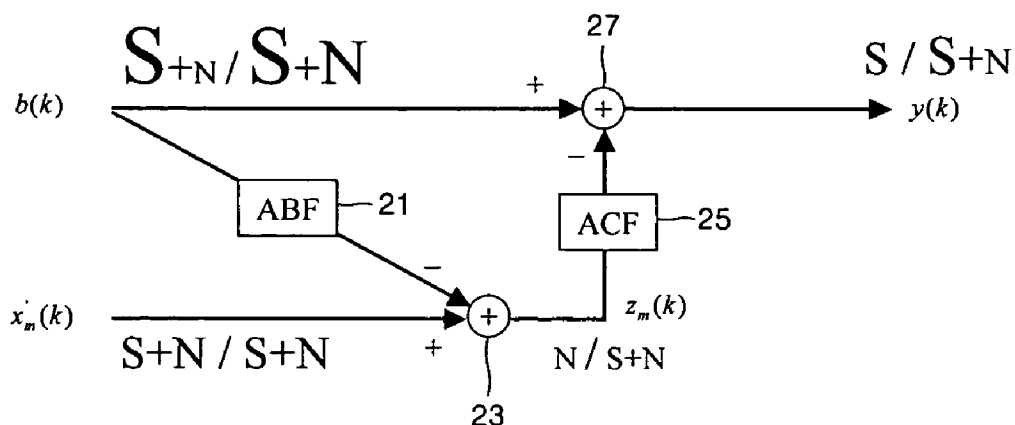


FIG. 3

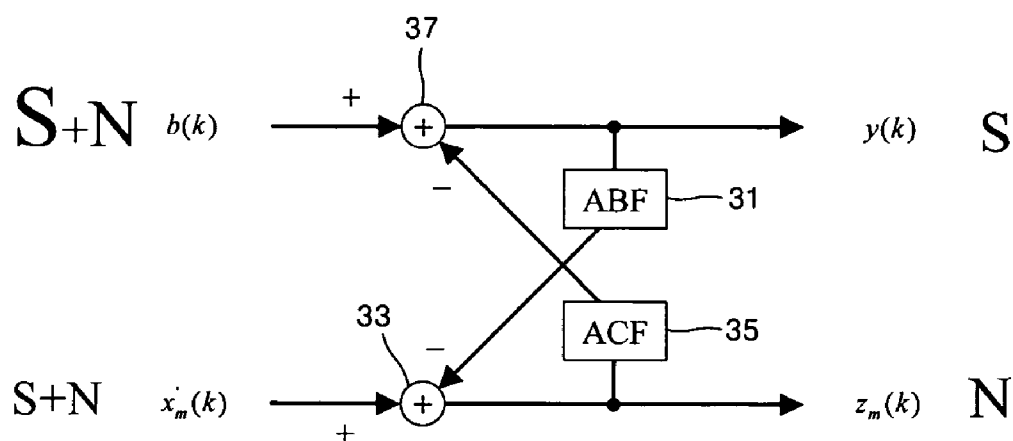
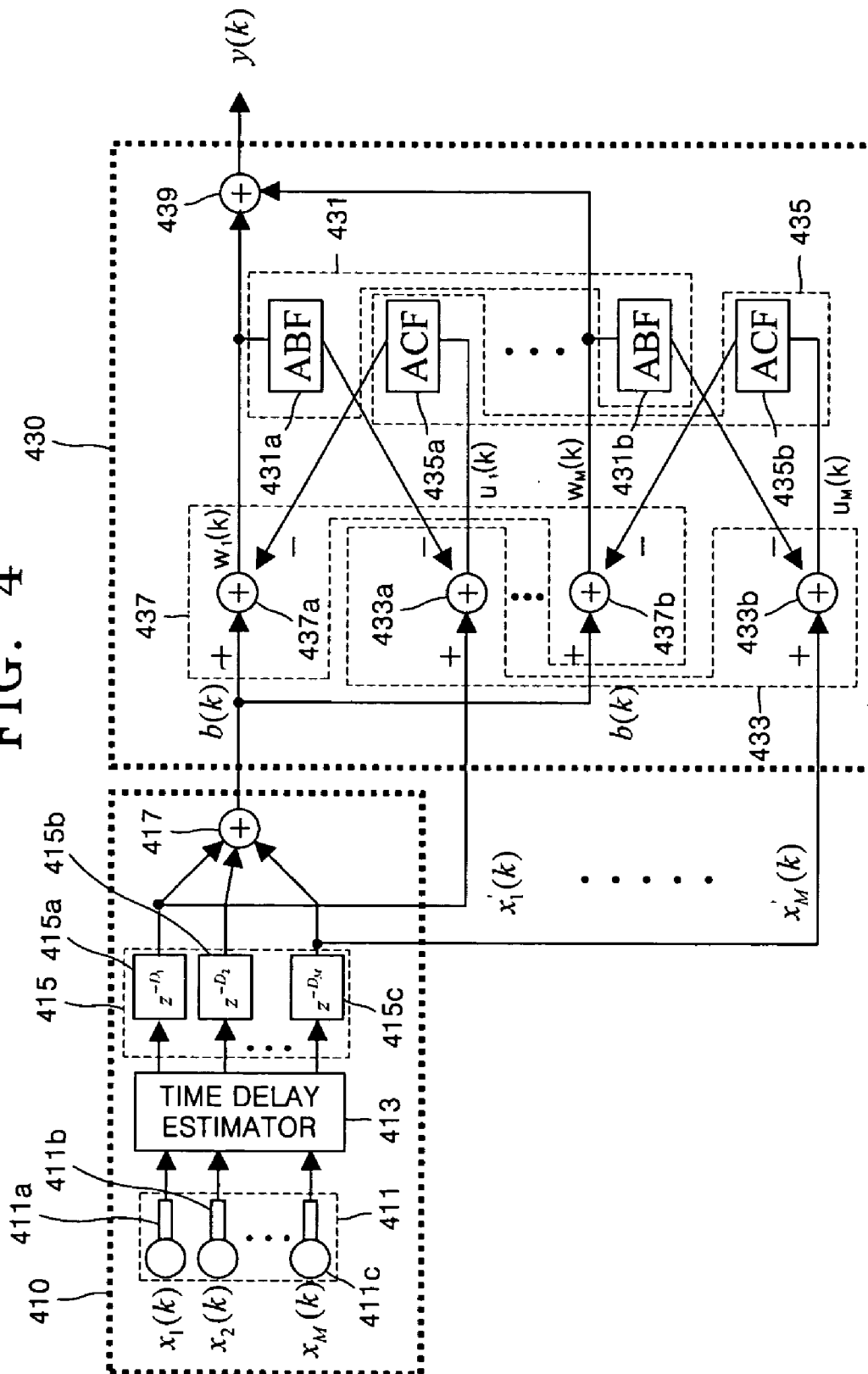
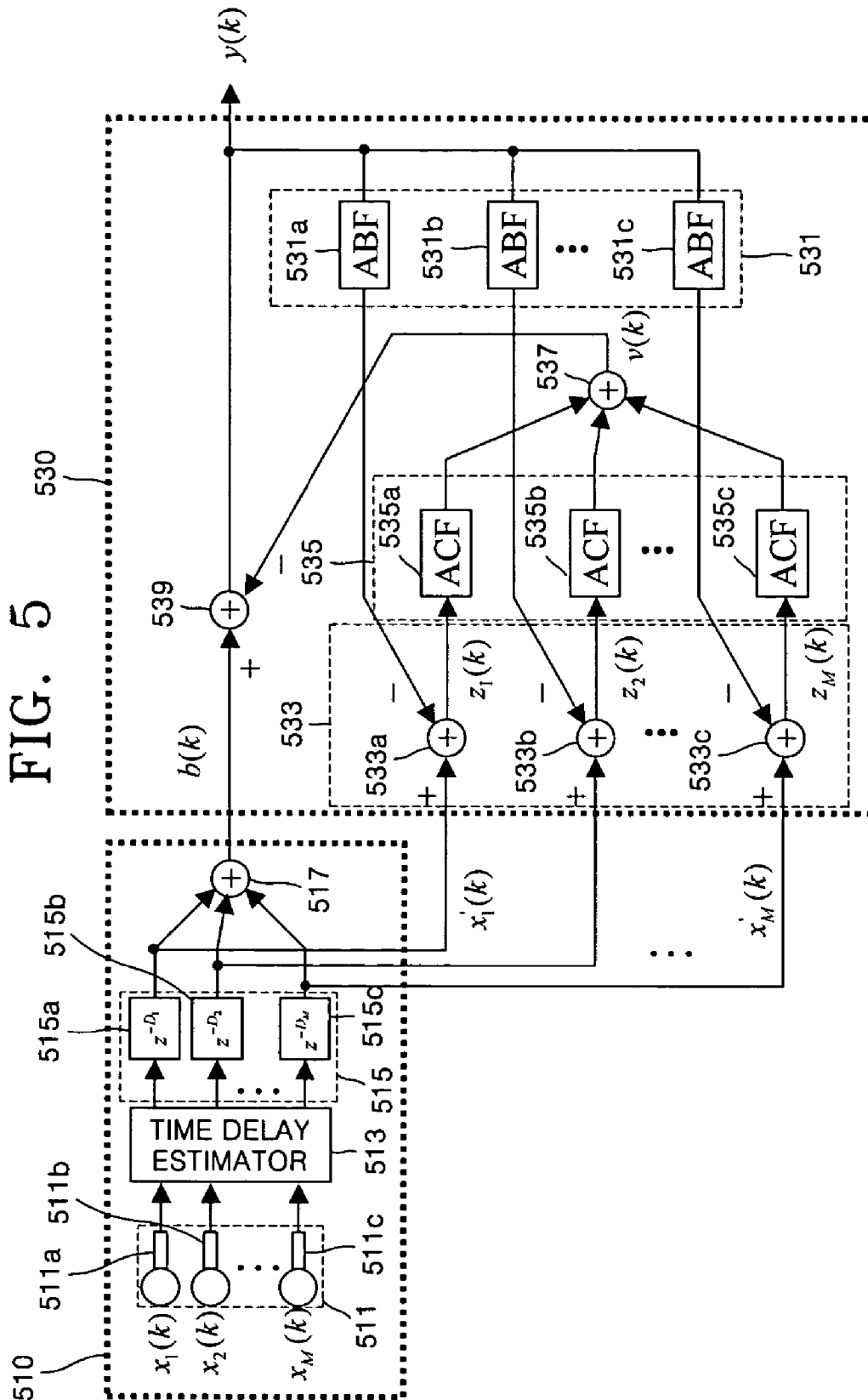


FIG. 4







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