

[54] **BEAMFORMER USING COEFFICIENT RESTRAINED ADAPTIVE FILTERS FOR DETECTING INTERFERENCE SIGNALS**

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[30] **Foreign Application Priority Data**

Sep. 1, 1994 [JP] Japan 6-208635

[51] Int. Cl.⁶ **G01S 15/00**

[52] U.S. Cl. **367/121; 367/901; 367/119; 367/905; 381/94**

[58] **Field of Search** 367/12, 119, 121, 367/123, 129, 901, 905, 103; 128/661.01; 381/94

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[57] **ABSTRACT**

In an adaptive array beamformer, a spatial beamforming filter is connected to a sensor array for respectively filtering and summing array signals to produce a first filter output containing a target signal that arrives in a specified direction. First adaptive filters provide transversal-filtering the first filter output to produce a second filter output not containing the target signal, using a first error signal by restraining their tap weight coefficients. The array signals are further coupled to subtractors. Each subtractor detects a difference between the second filter output of the corresponding first adaptive filter and the corresponding sensor signal to derive the first error signal. Second adaptive filters provide transversal-filtering the first error signals of the subtractors to produce third filter outputs, using a second error signal, by restraining their tap weight coefficients. The third filter outputs are summed and subtracted from the first filter output to produce an output of the beamformer, which is supplied as the second error signal to the second adaptive filters

10 Claims, 11 Drawing Sheets

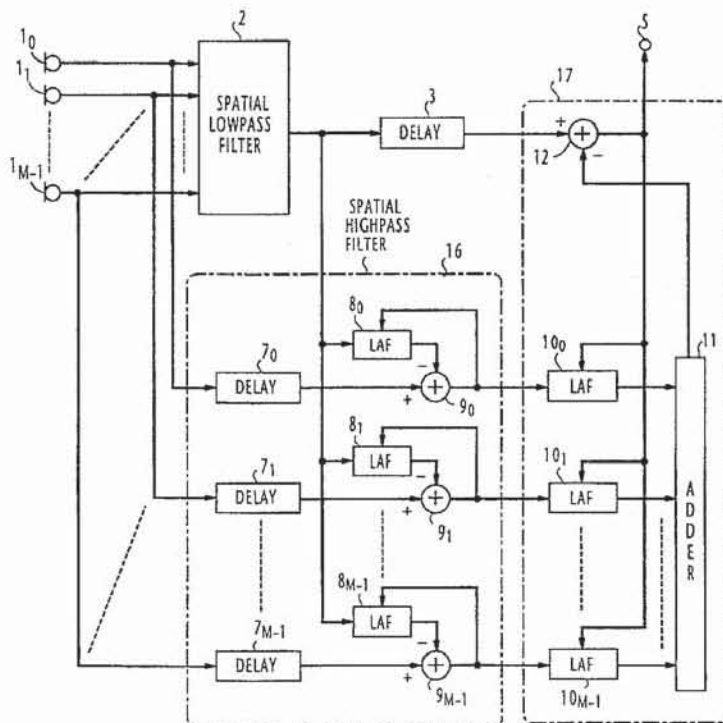


FIG. 1
PRIOR ART

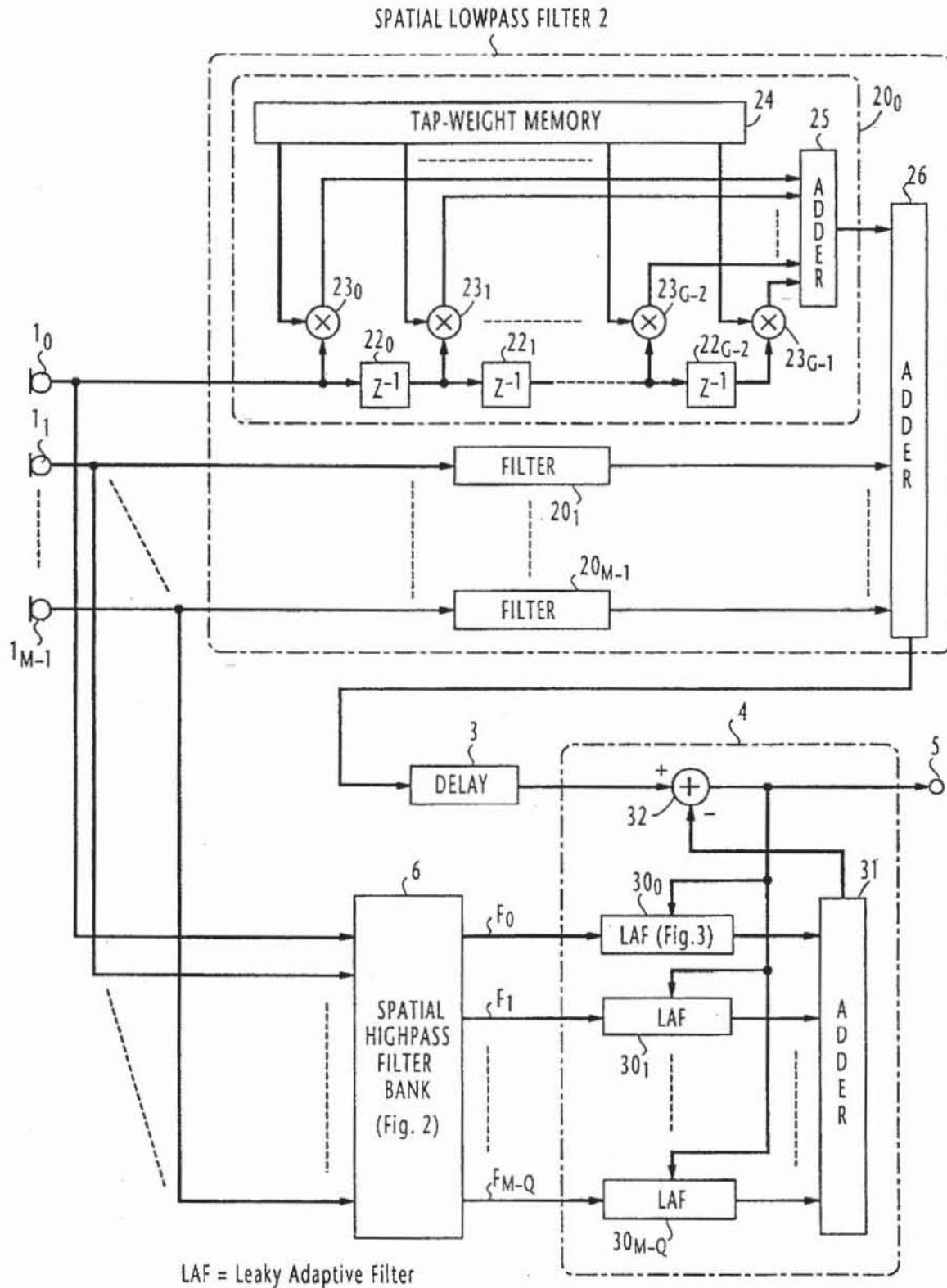


FIG. 2 PRIOR ART

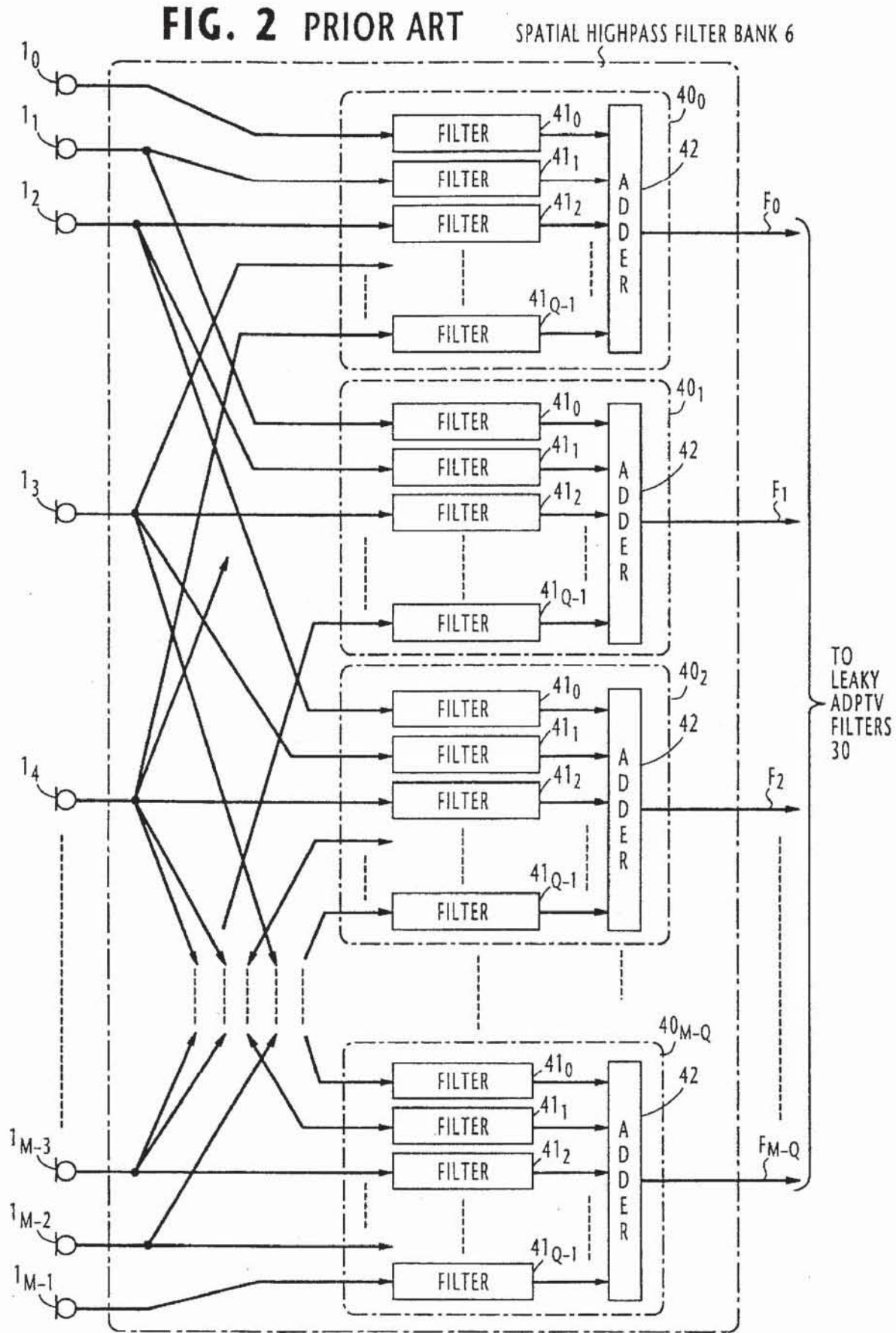


FIG. 3
PRIOR ART

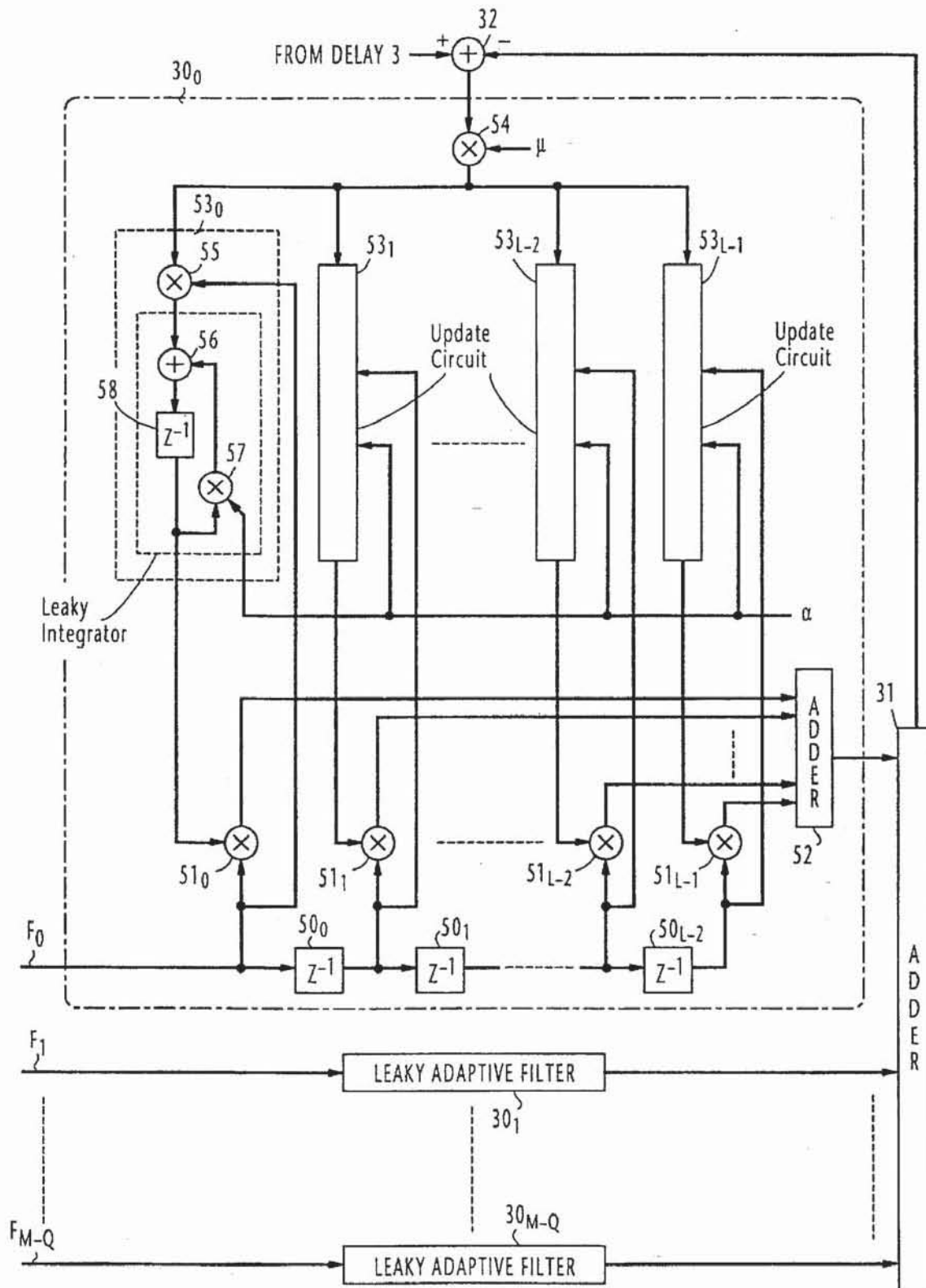
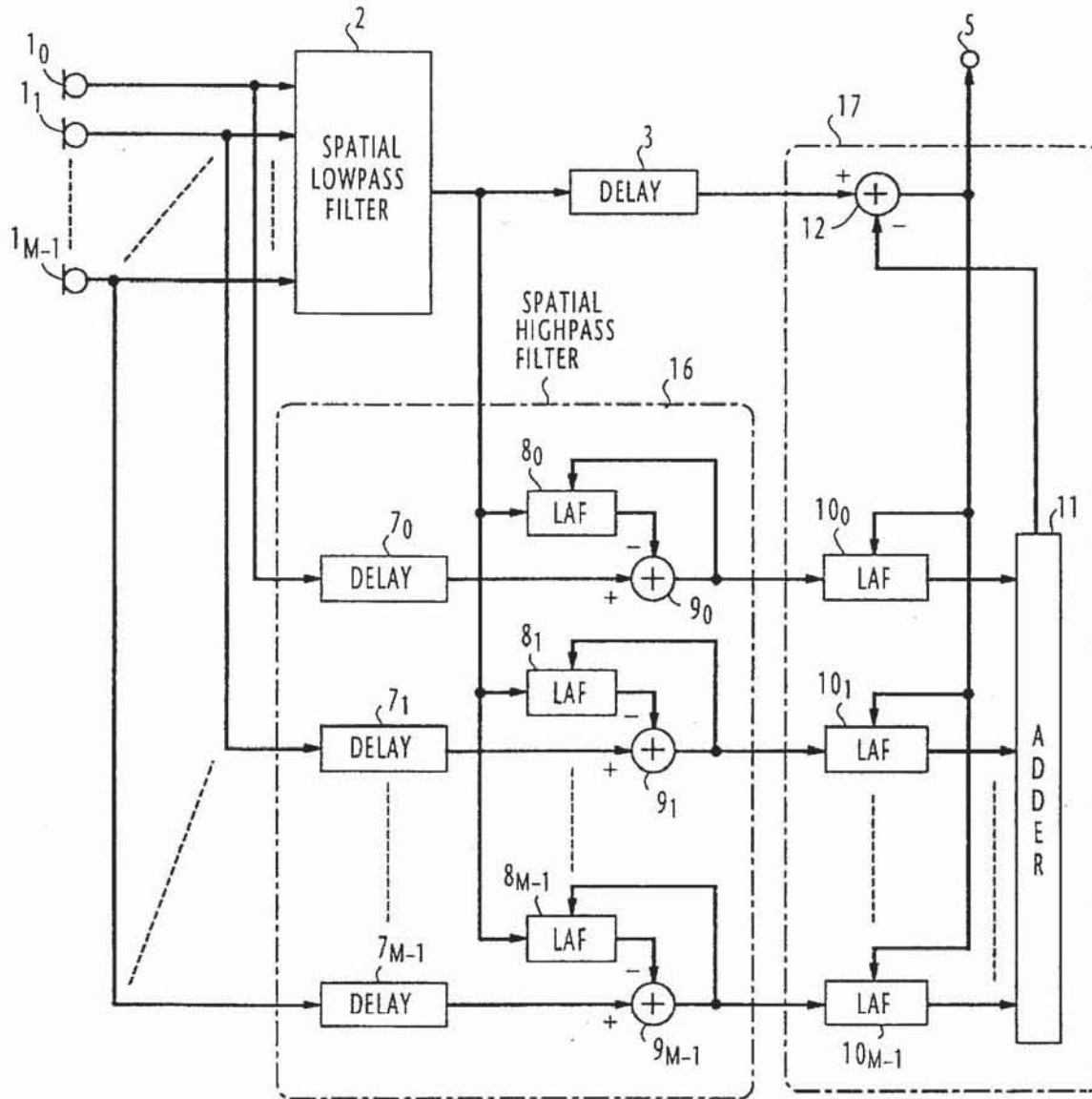


FIG. 4



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