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(54) **WIDE DYNAMIC RANGE MICROPHONE**

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H03G 3/20 (2006.01)

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(58) **Field of Classification Search** None
See application file for complete search history.

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(57) **ABSTRACT**

A microphone system has an output and at least a first transducer with a first dynamic range, a second transducer with a second dynamic range different than the first dynamic range, and coupling system to selectively couple the output of one of the first transducer or the second transducer to the system output, depending on the magnitude of the input sound signal, to produce a system with a dynamic range greater than the dynamic range of either individual transducer. A method of operating a microphone system includes detecting whether a transducer output crosses a threshold, and if so then selectively coupling another transducer's output to the system output. The threshold may change as a function of which transducer is coupled to the system output. The system and methods may also combine the outputs of more than one transducer in a weighted sum during transition from one transducer output to another, as a function of time or as a function of the amplitude of the incident audio signal. Methods of operating the system may include equalizing the outputs of two or more transducers prior to coupling one or more outputs to the system output.

20 Claims, 14 Drawing Sheets

