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(54) **AUDIO SPEAKER SYSTEM USING PIEZO DIAPHRAGM**

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(57) **ABSTRACT**

An audio speaker system includes: an amplifier, where a positive input terminal of the amplifier is configured to be coupled to a first reference voltage node; and a piezo diaphragm including: a metal plate; a first piezo film attached to the metal plate, where the first piezo film is configured to function as a speaker during operation of the audio speaker system; and a second piezo film attached to the metal plate and spaced apart from the first piezo film, where the second piezo film is configured to function as a microphone during operation of the audio speaker system, where an output terminal of the amplifier is coupled to the first piezo film, and where a negative input terminal of the amplifier is coupled to the second piezo film.

