

Title (en)  
PIEZOELECTRIC FILM SONIC EMITTER

Title (de)  
TONSENDER MIT PIEZOELEKTRISCHEM FILM

Title (fr)  
EMETTEUR SONIQUE A COUCHE PIEZO-ELECTRIQUE

Publication  
**EP 1247421 A4 20080521 (EN)**

Application  
**EP 00905530 A 20000104**

Priority  
US 0000103 W 20000104

Abstract (en)  
[origin: WO0150810A1] A speaker device for emitting subsonic, sonic or ultrasonic compression waves comprising a generally hollow drum, a rigid emitter plate (108) attached to the drum (100), and a plurality of apertures (112) formed within the plate which are covered by a thin piezoelectric film disposed across the emitter plate (108). A pressure source is coupled to the drum (100) for developing a biasing pressure with respect to the thin film (104) at the apertures (112) to distend the film (104) into an arcuate emitter configuration capable of constricting and extending in response to variations in the applied electrical input at the piezoelectric film (104) to thereby create a compression wave in a surrounding environment. Parametric ultrasonic frequency input is supplied to the piezoelectric film (104) to propagate multiple ultrasonic frequencies having a difference component corresponding to the desired subsonic, sonic or ultrasonic frequency range.

IPC 8 full level  
**H04R 3/00** (2006.01); **H04R 17/00** (2006.01); **B06B 1/06** (2006.01); **G10K 15/02** (2006.01); **H04R 23/00** (2006.01); **H04R 17/10** (2006.01)

CPC (source: EP KR)  
**B06B 1/0688** (2013.01 - EP); **G10K 15/02** (2013.01 - EP); **H04R 17/00** (2013.01 - EP); **H04R 23/00** (2013.01 - EP KR); **H04R 17/10** (2013.01 - EP); **H04R 2217/03** (2013.01 - EP)

Citation (search report)

- [X] US 4825116 A 19890425 - ITOH ICHIZO [JP], et al
- [A] US 4056742 A 19771101 - TIBBETTS GEORGE C
- [A] US 4725994 A 19880216 - KANEKO NAGAO [JP], et al
- [A] US 4284921 A 19810818 - LEMONON CLAIRE, et al
- See references of WO 0150810A1

Designated contracting state (EPC)  
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DOCDB simple family (publication)  
**WO 0150810 A1 20010712**; AU 2719000 A 20010716; CA 2396347 A1 20010712; CN 1190107 C 20050216; CN 1433661 A 20030730; EP 1247421 A1 20021009; EP 1247421 A4 20080521; HK 1050102 A1 20030606; JP 2003520002 A 20030624; KR 20020079767 A 20021019

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**US 0000103 W 20000104**; AU 2719000 A 20000104; CA 2396347 A 20000104; CN 00818838 A 20000104; EP 00905530 A 20000104; HK 03102258 A 20030328; JP 2001551061 A 20000104; KR 20027008678 A 20020704