

Title (en)  
Ultrasonic transducer

Title (de)  
Ultraschallwandler

Title (fr)  
Transducteur ultrasonore

Publication  
**EP 1050347 A3 20020724 (EN)**

Application  
**EP 99810540 A 19990618**

Priority  
KR 19990015913 A 19990503

Abstract (en)  
[origin: EP1050347A2] The present invention deals with an ultrasonic transducer mounted on the bottom or side surface of the cleaning tank of an ultrasonic cleaner. The ultrasonic transducer of the present invention includes: piezoelectric ceramics, electrodes for applying power to the piezoelectric ceramics, masses to be vibrated by the piezoelectric ceramics, a fastening means with a stud and a nut. and the front mass with various geometry vertical slits on its upper surface. The front mass has the recesses (vertical slits) on its top surface in order to improve the longitudinal mechanical quality factor ("Qmeff") of piezoelectric ceramics determining the cleaning efficiency of the ultrasonic cleaner. Preferably, the width of the recesses is 1 SIMILAR 2 mm and the depth is 1/3 SIMILAR 1/2 of the longitudinal length of the front mass. <IMAGE>

IPC 1-7  
**B06B 1/06**; **B08B 3/12**; **B06B 3/00**

IPC 8 full level  
**B08B 3/12** (2006.01); **B06B 1/06** (2006.01); **B06B 3/00** (2006.01)

CPC (source: EP KR)  
**B06B 1/0618** (2013.01 - EP); **B06B 3/00** (2013.01 - EP); **B08B 3/12** (2013.01 - KR)

Citation (search report)

- [A] US 5116343 A 19920526 - AMS FELIX [DE], et al
- [A] US 3939033 A 19760217 - GRGACH FRANK J, et al
- [XA] PATENT ABSTRACTS OF JAPAN vol. 1998, no. 12 31 October 1998 (1998-10-31)
- [A] PATENT ABSTRACTS OF JAPAN vol. 013, no. 367 (C - 626) 15 August 1989 (1989-08-15)
- [A] PATENT ABSTRACTS OF JAPAN vol. 1996, no. 04 30 April 1996 (1996-04-30)

Cited by  
CN109622545A; CN104438029A; CN106269694A; US10316387B2; US10233515B1; US8652397B2; WO2004041449A1; WO2016107521A1; US6841921B2; US7514846B2; US8574336B2; US8844897B2; US9617617B2; US10640846B2

Designated contracting state (EPC)  
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)  
**EP 1050347 A2 20001108**; **EP 1050347 A3 20020724**; KR 100346492 B1 20020726; KR 20000072947 A 20001205

DOCDB simple family (application)  
**EP 99810540 A 19990618**; KR 19990015913 A 19990503