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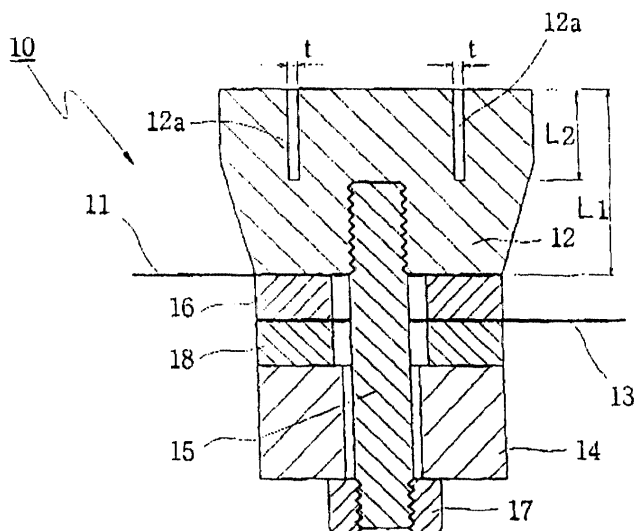
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(54) **Ultrasonic transducer**

(57) 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 (10) of the present invention includes: piezoelectric ceramics (16,18), electrodes (11,13) for applying power to the piezoelectric ceramics (16,18), masses (12,14) to be vibrated by the piezoelectric ceramics (16,18), a fastening means with a stud (15) and

a nut (17), and the front mass (12) with various geometry vertical slits (12a) on its upper surface. The front mass (12) has the recesses (12a) (vertical slits) on its top surface in order to improve the longitudinal mechanical quality factor ("Q<sub>meff</sub>") of piezoelectric ceramics (16,18) determining the cleaning efficiency of the ultrasonic cleaner. Preferably, the width of the recesses (12a) is 1 ~ 2mm and the depth is 1/3 ~ 1/2 of the longitudinal length of the front mass (12).

FIG. 1



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# EUROPEAN SEARCH REPORT

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EP 99 81 0540

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>23 May 2002</b>	Examiner <b>Anderson, A</b>
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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