



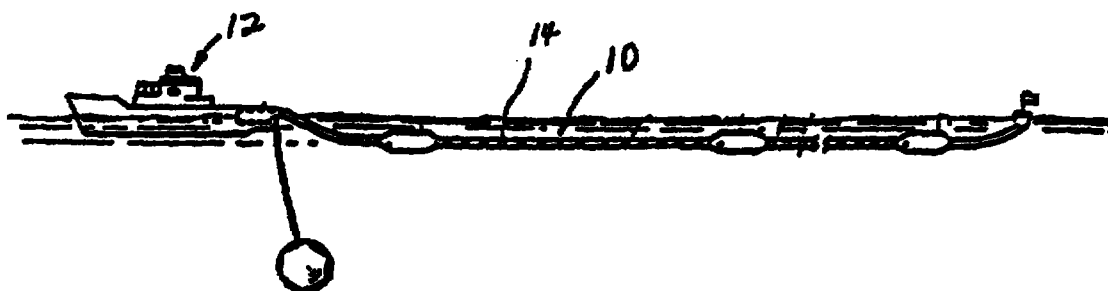
PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| (51) International Patent Classification <sup>6</sup> :<br><b>G01V</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>A2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   | (11) International Publication Number: <b>WO 97/13163</b><br>(43) International Publication Date: 10 April 1997 (10.04.97) |
| <p>(21) International Application Number: PCT/US96/15897</p> <p>(22) International Filing Date: 2 October 1996 (02.10.96)</p> <p>(30) Priority Data:<br/>08/537,972 2 October 1995 (02.10.95) US</p> <p>(71) Applicant: I/O EXPLORATION PRODUCTS (U.S.A.), INC.<br/>[US/US]; 12300 Parc Crest Drive, Stafford, TX 77477 (US).</p> <p>(72) Inventors: CHANG, Win, H.; 12115 Sugar Springs Drive,<br/>Houston, TX 77077 (US). BADGER, Algernon, S.; Rt. 1,<br/>Box 218 F, Bernard, TX 77435 (US). SIMENSKY, Bernard;<br/>2111 Mid Lane, A-13, Houston, TX 77027 (US).</p> <p>(74) Agents: HEADLEY, Tim et al.; Haynes and Boone, L.L.P.,<br/>3100 NationsBank Plaza, 901 Main Street, Dallas, TX<br/>75202-3789 (US).</p> | <p>(81) Designated States: AU, AZ, CN, NO, SG, European patent<br/>(AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU,<br/>MC, NL, PT, SE).</p> <p><b>Published</b><br/><i>Without international search report and to be republished<br/>upon receipt of that report.</i></p> <div data-bbox="1066 913 1417 1037" style="border: 1px solid black; padding: 5px; transform: rotate(-2deg);"> <p>THIS SHEET HAS BEEN<br/>REPLACED</p> </div> |                                                                                                                            |

(54) Title: ACOUSTIC TRANSDUCER



## (57) Abstract

An acoustic transducer assembly includes a piezoelectric ceramic crystal. The assembly also includes a pair of solid circular metal plates positioned to sandwich the piezoelectric ceramic crystal between them, wherein each of the metal plates comprises: (i) an outer rim circling a concave portion formed in a first surface of the metal plate, the first surface oriented toward the piezoelectric ceramic crystal; and (ii) an epoxy wicking barrier formed in the first surface, adjacent to the outer rim. The assembly also includes an epoxy adhesive interposed between the metal plates and the piezoelectric ceramic crystal, wherein the outer rim of each plate is bonded to the piezoelectric ceramic crystal by the epoxy adhesive, the pair of plates thus forming a cavity between them. The assembly also includes a flexing stop attached to each first surface.

This Sheet Has Been Replaced

