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| <b>(21) International Application Number:</b> PCT/US99/20423<br><b>(22) International Filing Date:</b> 7 September 1999 (07.09.99)<br><br><b>(30) Priority Data:</b><br>09/197,876                      23 November 1998 (23.11.98)      US<br><br><b>(71) Applicant:</b> GENERAL ELECTRIC COMPANY [US/US]; 1 River Road, Schenectady, NY 12345 (US).<br><br><b>(72) Inventors:</b> HERRIN, Jeff, Lee; 16 Stage Run, Waterford, NY 12188 (US). MOLEZZI, Michael, Joseph; Apartment 34-4, 2475 Brookshire Drive, Schenectady, NY 12309 (US). DRESSLER, John, Lawrence; 1216 Waterwyck Trail, Dayton, OH 45458 (US).<br><br><b>(74) Agents:</b> SNYDER, Bernard et al.; General Electric Company, 3135 Easton Turnpike W3C, Fairfield, CT 06431 (US). |           | <b>(81) Designated States:</b> JP, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).<br><br><b>Published</b><br><i>With international search report.</i><br><br><br>*162162*<br><br><br>*G00002* |

**(54) Title:** APPARATUS FOR ATOMIZING HIGH-VISCOSITY FLUIDS USING LOW-FREQUENCY VIBRATIONS**(57) Abstract**

Apparatus which is selectively operable at low frequencies (less than 5,000 Hz and preferably between about 100 Hz to about 1,000 Hz) breaks up jets of high-viscosity fluid into monodisperse droplets. The apparatus includes a housing (20) having a chamber (22), a piston (30) disposed in the chamber (22), a magnetic-coil system (40) operably attached to the housing (20) and to the piston (30), and an oscillator (50) for driving the magnetic-coil system (40). The housing (20) and the piston (30) define a reservoir (12) for receiving a supply of high-viscosity fluid which is acted upon by oscillating motion of the piston (30) to impart pressure perturbations on the supply of fluid so that the fluid upon discharge from the reservoir (12) separates and breaks up into a plurality of monodisperse droplets. Also disclosed is a method for optimizing the performance of the apparatus to minimize the power required for droplet formation.

