

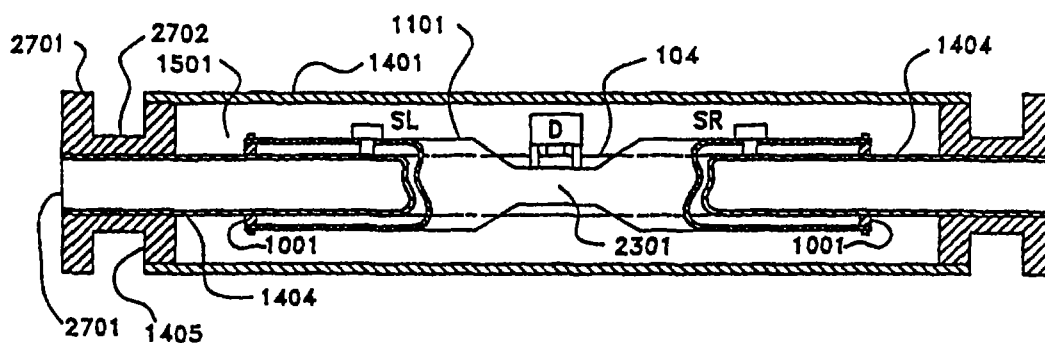
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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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| <b>(21) International Application Number:</b> PCT/US99/02350<br><b>(22) International Filing Date:</b> 5 February 1999 (05.02.99)<br><br><b>(30) Priority Data:</b><br>09/020,704      9 February 1998 (09.02.98)      US<br><br><b>(71) Applicant:</b> MICRO MOTION, INC. [US/US]; 7070 Winchester Circle, Boulder, CO 80301 (US).<br><br><b>(72) Inventors:</b> VAN CLEVE, Craig, Brainerd; 2921 Stagecoach Trail, P.O. Box 1382, Lyons, CO 80540 (US). LANHAM, Gregory, Treat; 1612 - 6th Avenue, Longmont, CO 80501 (US).<br><br><b>(74) Agents:</b> DUFT, Donald, M. et al.; Duft, Graziano & Forest, P.C., Suite 140, 1790-30th Street, Boulder, CO 80301-1018 (US). |           | <b>(81) Designated States:</b> AU, BR, CA, CN, ID, IN, JP, KR, MX, PL, RU, 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><div style="text-align: center;"> <br/>         *162162*<br/> <br/>         *G00002*       </div> |

**(54) Title:** SPRING RATE BALANCING OF THE FLOW TUBE AND A BALANCE BAR IN A STRAIGHT TUBE CORIOLIS FLOWMETER

**(57) Abstract**

A Coriolis flowmeter having a single straight flow tube, a balance bar parallel to said flow tube, a brace bar connecting ends of the balance bar to the flow tube and to a surrounding case. Improved dynamic balance of the flowmeter is maintained in response to changes in density of the flowing material by reducing the spring function of the balance bar and/or the flow tube. This concentrates the spring function of the flowmeter in the brace bar structure. A vibrational node in the brace bar structure separates the effective spring function of the balance bar from the effective spring function of the flow tube. The vibrational node moves within the brace bar in response to materials of different densities in the flow tube at different times. This nodal movement changes the ratio of the effective balance bar spring function to that of the effective flow tube spring function to maintain improved dynamic vibrational balance of the flowmeter without involving the case mass.