



(19) **United States**

(12) **Patent Application Publication**
Olsson

(10) **Pub. No.: US 2002/0050898 A1**

(43) **Pub. Date: May 2, 2002**

(54) **METHOD AND ARRANGEMENT FOR DETERMINING THE POSITION OF AN ELECTROMAGNETIC ACTUATOR**

(52) **U.S. Cl. 335/220**

(76) **Inventor: Johan Olsson, Amal (SE)**

(57) **ABSTRACT**

Correspondence Address:
Jeffrey Slusher
34825 Sultan-Startup Rd.
Sultan, WA 98294 (US)

The invention relates to a method for driving and measuring the position of an electromagnetic actuator that operates according to the voice coil principle. The coil thus moves within a magnetized gap relative to permanent magnet core. As the coil extends partially outside of the core, its inductance will change. The voice coil is connected to a controllable current source that can both generate and control an average current and an AC component through the voice coil. The frequency of the AC component is measured, and is a function of the instantaneous inductance of coil, which in turn is a function of the coil's position relative to the core. In an alternative embodiment, the phase shift between an AC current and an AC voltage through the coil is analyzed to determine the position of the coil, while simultaneously controlling the force.

(21) **Appl. No.: 09/919,689**

(22) **Filed: Jul. 31, 2001**

(30) **Foreign Application Priority Data**

Jul. 28, 2000 (SE)..... 0002796-1

Publication Classification

(51) **Int. Cl.⁷ H01F 7/08**

