



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G01D 5/14, 5/16		A1	(11) International Publication Number: WO 99/08073
			(43) International Publication Date: 18 February 1999 (18.02.99)
(21) International Application Number: PCT/US98/16238		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 4 August 1998 (04.08.98)			
(30) Priority Data: ① 08/906,773 ✓ 6 August 1997 (06.08.97) ✓ US ✓			
(71) Applicant: ① FISHER CONTROLS INTERNATIONAL, INC. [US/US]; 8000 Maryland Avenue, Clayton, MO 63105 (US) ✓			
(72) Inventors: ① DILGER, John P.; 2703 275th Street, Marshalltown, IA 50158 (US) ✓ ② DIELSCHNEIDER, Nile, Kenton; 117 Dwight, P.O. Box 11, Conrad, IA 50621 (US) ✓		Published With international search report. ✓	
(74) Agent: SCARPELLI, Nate, F.; Marshall, O'Toole, Gerstein, Murray & Borun, Suite 6300, 233 South Wacker Drive, Chicago, IL 60606 (US).			

(54) Title: FLUX SHAPING POLE PIECES FOR A MAGNETIC DISPLACEMENT SENSOR ✓

(57) Abstract

A displacement sensor includes a magnet assembly having a housing for mounting to one of first and second relatively moveable elements. First and second magnets are mounted to the magnet assembly housing so that the north pole of one magnet confronts the south pole of the other magnet, and vice versa. The first and second magnets form a longitudinal space between them. A flux-shaping pole piece on each of the poles have configurations to sculpt fringing magnetic flux in the longitudinal space so that magnetic flux density in the longitudinal space varies substantially linearly along a line in the longitudinal space between the confronting poles of the magnets. A magnetic field sensor assembly has a housing for mounting to the other of the first and second elements. A magnetic flux sensor is mounted to the sensor housing on the line in the longitudinal space between the first and second magnets. In one embodiment, each of the flux-shaping pole pieces has a pentagon shape in a plane of primary flux pattern, forming a narrow face confronting the longitudinal space between the first and second magnets. The narrow face of each flux-shaping pole piece is wider across the primary flux pattern than along the length of the line in the longitudinal space.

