

(51) International Patent Classification:
G01L 9/00 (2006.01)(21) International Application Number:
PCT/US2011/023384(22) International Filing Date:
1 February 2011 (01.02.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
61/300,620 2 February 2010 (02.02.2010) US(71) Applicant (for all designated States except US): **MKS INSTRUMENTS, INC.** [US/US]; 2 Tech Drive, Andover, MA 01810 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **BLANKENSHIP, Steven, D.** [US/US]; 23 Clifford Street, Melrose, MA 02176 (US).(74) Agent: **KUSMER, Toby, H.**; McDermott Will & Emery LLP, 28 State Street, Boston, MA 02109-1775 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))

(54) Title: CAPACITIVE PRESSURE SENSOR

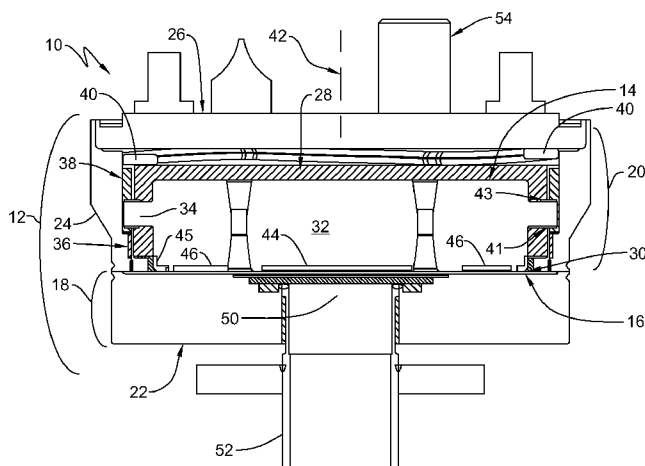


FIG. 1

(57) Abstract: An improved capacitive manometer, the manometer comprises: a diaphragm including (a) a common electrode and (b) an electrode structure including a center electrode and ring electrode, wherein the diaphragm is movable between (i) a zero position when the pressure on each side of the diaphragm is the same and (ii) a maximum differential position when the maximum measurable differential pressure is applied to the diaphragm, and a support structure arranged so as to support the diaphragm so that the diaphragm is constrained relative to the electrode structure, and the common electrode is spaced from and axially aligned with the center and ring electrodes relative to an alignment axis of the manometer; wherein the electrode structure is secured relative to the diaphragm at least three clamping locations angularly spaced around the alignment axis; and wherein the angle defined within each right plane containing a point of constraint of the diaphragm and the point of each clamping location relative to the plane of the diaphragm in the zero position is between 60° and 90° so as to reduce changes in electrode disk support height, enable smaller gaps and improved stability between the diaphragm and electrode structure. An additional improvement is provided by including a spacer ring including a plurality of tabs; and a clamp arranged to clamp the electrode structure to the spacer ring at the

location of each of the tabs so as to define a plurality of equiangularly spaced, clamped locations around the alignment axis, so as to eliminate the possibility of an occasional spacer induced radial shear force and subsequent potential stick slip condition that could impact repeatability and stability.