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- (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.
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**Declarations under Rule 4.17:**

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

**Published:**

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[Continued on next page]

(54) **Title:** SYSTEM AND METHOD FOR ASSESSING THE PERFORMANCE OF AN ATTITUDE CONTROL SYSTEM FOR SMALL SATELLITES

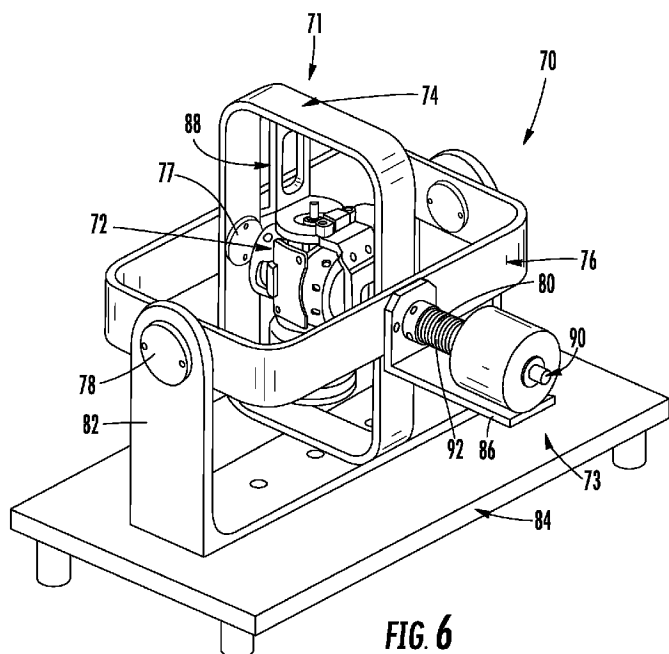


FIG. 6

(57) **Abstract:** Various embodiments of the present invention include systems and methods for assessing the performance of an actuator of an attitude control system (ACS), such as a control moment gyroscope (CMG). In one embodiment, a system includes a support bracket assembly coupled to an actuator, wherein the actuator is configured to generate an output torque. The system also includes at least one sensor assembly coupled to the support bracket assembly, wherein the at least one sensor assembly includes a sensor configured to measure the output torque about at least one axis of the support bracket assembly while the support bracket assembly remains substantially motionless.





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**A. CLASSIFICATION OF SUBJECT MATTER*****B64G 1/10(2006.01)i, B64G 1/24(2006.01)i, G05D 1/08(2006.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

B64G 1/10; B25J 13/00; G01C 19/32; G01C 19/28; B64G 1/20; B64G 7/00; G01C 19/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: assessing, evaluating, estimating, torque, attitude, control, sensor, gimbal, actuator

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 06-064599 A (ISHIKAWAJIMA HARIMA HEAVY IND. CO., LTD.) 08 March 1994 See paragraph 17 - paragraph 31 and figures 1 - 6.	1-23
A	US 3,931,747 A (JAMES R. ERSPAMER) 13 January 1976 See column 1, line 62 - column 2, line 59 and figure 1.	1-23
A	US 5,433,123 A (FRITZ HOFMANN et al.) 18 July 1995 See column 2, line 42 - column 4, line 2; claim 1 and figures 1 - 4.	1-23
A	US 4,573,651 A (AUSTIN N. STANTON) 04 March 1986 See column 2, line 25 - column 4, line 46 and figures 1 - 6.	1-23

 Further documents are listed in the continuation of Box C. See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/043128**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 06-064599 A	08.03.1994	None	
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US 5,433,123 A	18.07.1995	EP 0607850 A2 EP 0607850 A3 EP 0607850 B1	27.07.1994 12.10.1994 27.08.1997
US 4,573,651 A	04.03.1986	None	