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[Continued on next page]

(54) Title: AUTOMATIC HINGE OPENING ASSEMBLY FOR ELECTRONIC DEVICE

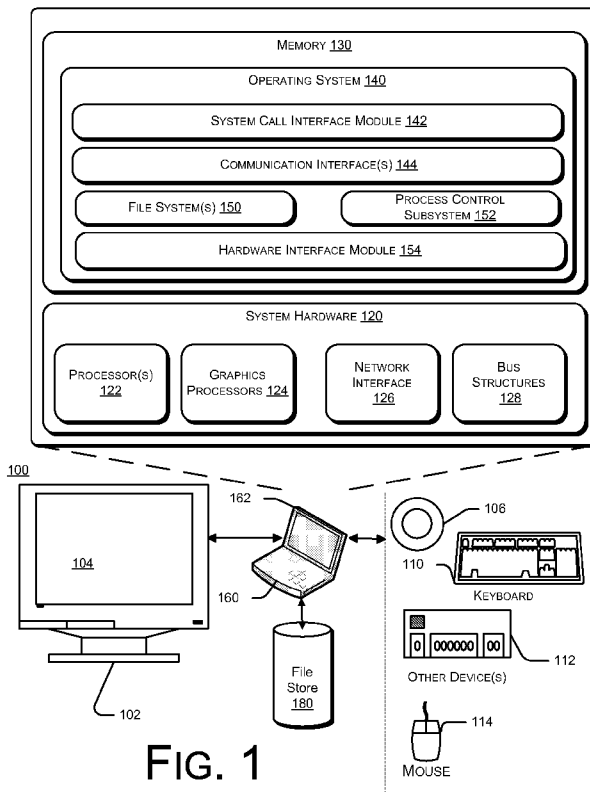


FIG. 1

(57) Abstract: In one embodiment an electronic device comprises a housing having a first section comprising a display and a second section comprising a keyboard coupled to the first section by a hinge assembly and an automatic hinge opening assembly for the housing. The automatic hinge opening assembly comprises a hinge pin assembly mountable to the first section of the housing of the electronic device a pin rotatable about an axis between a first position and a second position and a hinge plate coupled to the pin and connectable to a hinge which connects the first section of the housing to a second section of the housing, and at least one torsion member coupled to the pin to apply a torque to the pin, wherein the torsion member is to store potential energy when the first section of the housing and the second section of the housing are in a closed position.. Other embodiments may be described.

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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).

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**A. CLASSIFICATION OF SUBJECT MATTER****G06F 1/16(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)

G06F 1/16; E05D 3/02; E05D 11/10; E05D 11/08; E05F 1/08

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: "hinge, electronic device, torsion, torque"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2009-0106939 A1 (JUI-HUNG CHANG) 30 April 2009 See the abstract, figures 1-16, and paragraphs [0037]-[0057].	1-20
Y	US 2006-0225248 A1 (MITSUHIRO ISHIWATA) 12 October 2006 See the abstract, figures 1-6, and paragraphs [0031]-[0037].	1-20
A	US 2005-0050683 A1 (YOSHIHIDE TONOGAI) 10 March 2005 See the abstract, figures 2-7, and paragraphs [0025]-[0048].	1-20
A	US 2006-0236504 A1 (SHENG-NAN LU et al.) 26 October 2006 See the abstract, figures 1-5, and paragraphs [0016]-[0020].	1-20

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

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**INTERNATIONAL SEARCH REPORT**

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2009-0106939 A1	30.04.2009	TW 200918774 A	01.05.2009
US 2006-0225248 A1	12.10.2006	JP 2007-126880 A KR 10-0752638 B1 TW 291091 B	24.05.2007 29.08.2007 11.12.2007
US 2005-0050683 A1	10.03.2005	CN 1590789 A CN 1590789 C0 CN 2748688 Y0 JP 2005-083432 A KR 10-2005-0025226 A	09.03.2005 09.03.2005 28.12.2005 31.03.2005 14.03.2005
US 2006-0236504 A1	26.10.2006	TW 277964 U TW 277964 Y	11.10.2005 11.10.2005