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(54) Title: COGLESS MOTOR DRIVEN ACTIVE USER INTERFACE HAPTIC FEEDBACK SYSTEM

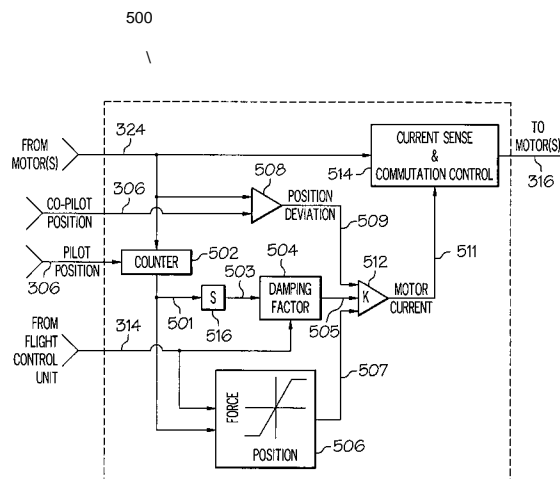


FIG. 5

(57) Abstract: An aircraft user interface haptic feedback system includes a user interface, a position sensor, a cogless motor, and a control circuit. The user interface is movable to a position. The position sensor senses the position of the user interface and supplies a user interface position signal. The cogless motor is coupled to the user interface, and receives motor drive signals. The cogless motor, in response to the motor drive signals, supplies feedback force to the user interface. The control circuit receives at least the user interface position signal and a signal representative of the motor current and is operable, in response to at least these signals, to control the motor current supplied to the cogless motor using a non-trapezoidal motor commutation scheme.

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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)
B64C G06F G05G

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

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

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	US 2004/100440 A1 (LEVIN MICHAEL D [US] ET AL) 27 May 2004 (2004-05-27) paragraphs [0012] - [0014]; figures 3A, 3B/4A-C, 5, 7A-E, 8	1-4 5-10.
Y	US 2005/173595 A1 (HOH ROGER H [US]) 11 August 2005 (2005-08-11) paragraphs [0012] - [0015], [0043], [0047], [0049], [0056]; figures 4, 5	5-10
Y	EP 1 628 176 A (IMMERSION CORP [US]) 22 February 2006 (2006-02-22) figures 7b, 7e	5
Y	US 2005/080495 A1 (TESSIER CLAUDE [CA] ET AL) 14 April 2005 (2005-04-14) paragraph? [0046], [0047], [0112], [0117]	7, 10

D Further documents are listed in the continuation of Box C.

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