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[Continued on next page]

(54) Title: HAPTIC DEVICE FOR MANIPULATOR AND VEHICLE CONTROL

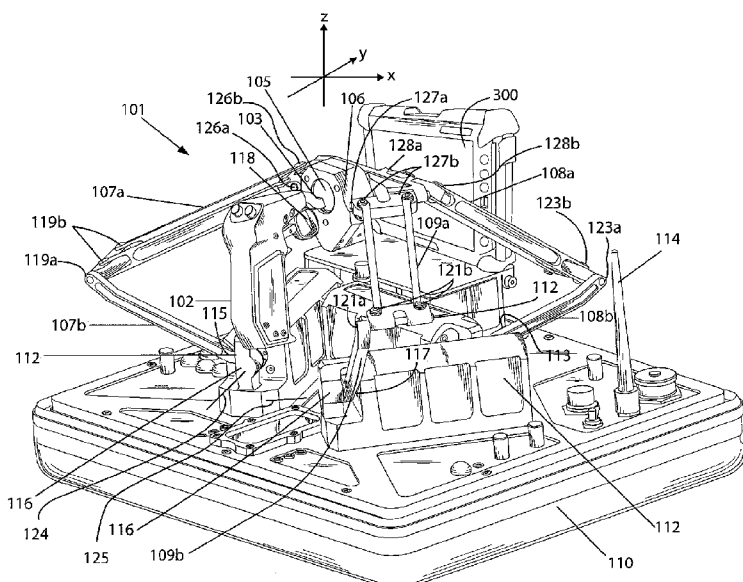


FIG. 1

(57) Abstract: An interface (101) for converting human control input gestures to telematic control signals includes a plurality of articulating arms (107, 108, 109) each mounted at a base end (113, 115, 117) to an interface base and coupled at an opposing end to a housing (106). The articulating arms are operable to permit linear translational movement of the housing in three orthogonal directions. At least one sensor (116) of a first kind is provided for measuring the linear translational movement. A pivot member (201) is disposed in the housing and is arranged to pivot about a single pivot point. A grip (102) is provided and is attached to the pivot member so that a user upon grasping the grip can cause the pivot to rotate within the housing. A button (118) is provided to switch between at least two modes, wherein when in a first mode control signals are used to control a vehicle base (502), and when in the second mode control signals are used to control a robotic arm (504) coupled to the vehicle base (502).

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— *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))*

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28 February 2013

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/037751

A. CLASSIFICATION OF SUBJECT MATTER
 INV. B25J9/16 G05B19/409 G05G9/047
 ADD.

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)
 B25J G05B 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 practicable, search terms used)
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 216 467 A (COLSTON JOHN R [US]) 5 August 1980 (1980-08-05) the whole document -----	1,6
X	WO 2010/085184 A1 (HUSQVARNA AB [SE]; CARLSSON MARTIN [SE]) 29 July 2010 (2010-07-29) page 2, line 10 - page 7, line 8 -----	1,3-6, 8-10
X	US 5 737 500 A (SERAJI HOMAYOUN [US] ET AL) 7 April 1998 (1998-04-07) column 6, line 5 - line 51 column 16, line 10 - column 18, line 29 column 22, line 5 - column 23, line 40 -----	1,3-6, 8-10
X	US 2001/002098 A1 (HAANPAA DOUGLAS [US] ET AL) 31 May 2001 (2001-05-31) paragraph [0007] - paragraph [0011] ----- -/--	5,10

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	"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
"E" earlier application or patent but published on or after the international filing date	"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
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 8 January 2013	Date of mailing of the international search report 15/01/2013
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Patsiopoulos, N
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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 007 300 A (SIVA KUMAR V [GB]) 16 April 1991 (1991-04-16) the whole document -----	2,7
X	US 2005/252329 A1 (DEMERS JEAN-GUY [CA]) 17 November 2005 (2005-11-17) paragraph [0033] - paragraph [0080] -----	2,7
A	EP 1 876 505 A1 (FORCE DIMENSION S A R L [CH]) 9 January 2008 (2008-01-09) paragraph [0013] - paragraph [0046] -----	2,7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/037751

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1, 3-6, 8-10

HAPTIC DEVICE FOR MANIPULATOR AND VEHICLE CONTROL

2. claims: 2, 7

FORCE DETECTION OF A HAPTIC DEVICE FOR MANIPULATOR AND
VEHICLE CONTROL

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2012/037751

Patent document cited in search report	Publication date	Publication date	Patent family member(s)	Publication date
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